QK
496
.I
.B4X
BOT
V.1

THE

FLORA SYLVATICA

FOR

SOUTHERN INDIA:

CONTAINING QUARTO PLATES OF ALL THE PRINCIPAL TIMBER TREES IN SOUTHERN INDIA AND CEYLON, ACCOMPANIED BY A BOTANICAL MANUAL, WITH DESCRIPTIONS OF EVERY KNOWN TREE AND SHRUB, AND ANALYSIS OF EVERY GENUS NOT FIGURED IN THE PLATES.

BY
MAJOR R. H. BEDDOME,
CONSERVATOR OF FORESTS.

Smithsonian Institution
242398
National Museum.

Vol. I.

Madras:
PRINTED BY GANTZ BROTHERS,
AT THE ADELPHI PRESS, MOUNT ROAD.

581.954
B39

INDEX

TO THE TREES AND SHRUBS FIGURED, ARRANGED ACCORDING TO THEIR NATURAL ORDERS.

(The Italics are Synonyms.)

ORDER I—DILLENIACEÆ.

		Tab.
1.	Dillenia speciosa.	... ciii.
	,, *bracteata*	... cxv.
	,, pentagyna	.. civ.
3.	Wormia bracteata	... cxv.

II.—MAGNOLIACEÆ.

4.	Michelia Nilagirica.	... lxii.

III.—ANONACEÆ.

5.	Bocagea Dalzellii, Anal. Pl. I. fig. 4.	
	Sageræa Dalzelii, Anal. Pl. I. fig. 4.	
6.	Popowia Beddomeana, Anal. Pl. 1. fig. 2.	
	Popowia ramosissima, Anal. Pl. I. fig. 2.	
7.	Goniothalamus Wightii, Anal. Pl. I. fig. 3.	
8.	Mitrephora grandiflora.	... lxxv.
9.	Xylopia parviflora.	... clxxii.
10.	,, Championii, Anal. Pl. I. fig. 5.	
11.	Cyathocalyx Zeylanicus, Anal. Pl. I. fig. 6.	
12.	Unona Lawii, Anal. Pl. 1. fig. 1.	
13.	Polyalthia cerasoides.	... i.
14.	,, longifolia.	... xxxviii.
15.	,, coffeoides.	... lxxiii.
16.	,, fragrans.	... lxxiv.
	Guatteria. See Polyalthia	
17.	Phæanthus Malabaricus, Anal. Pl. I. fig. 7.	
18.	Saccopetalum tomentosum.	... xxxix.
19.	Miliusa velutina	.. xxxvii.
20.	Alphonsea Madrasapatana	... lxxvi.
21.	Orophea erythrocarpa, Anal. Pl. I. fig. 8.	

IV.—MENISPERMACEÆ.

22.	Cocculus cordifolius, Anal. Pl. II. fig. 1.	

V.—BERBERIDACEÆ.

23.	Berberis Nepalensis, Anal. Pl. II. fig. 2.	
	Berberis Leschenaultii, Anal. Pl. II. fig. 2.	
	Mahonia. See Berberis.	

VI.—CAPPARIDACEÆ.

24.	Capparis stylosa, Anal. Pl. II. fig. 3.	
25.	Cratæva religiosa.	... cxvi.

VII.—MORINGACEÆ.

26.	Moringa pterygosperma.	... lxxx.

VII-A.—VIOLACEÆ.

Tab.

27. Alsodeia Zeylanica. ... . ccxxix.

VIII.—BIXINEÆ.

28. Cochlospermum gossypium. .. .. clxxi.
29. Bixa Orellana. ... ... lxxix.
30. Scolopia crenata. ... ... lxxviii.
Phoberos. See Scolopia.
31. Erythrospermum phytolaccoides, Anal. Pl. II. fig. 6.
32. Flacourtia inermis, Anal. Pl. II. fig. 4.
33. „ sapida, Anal. Pl. II. fig. 4.
34. „ sepiaria, Anal. Pl. XXIV. fig. 4. ♀ only
35. Aberia Gardneri, Anal. Pl. II. fig. 5.
Roumea hebecarpa, Anal. Pl. II. fig. 5.
36. Trichadenia Zeylanica, Anal. Pl. II. fig. 7.
37. Hydnocarpus alpina. ... . xxvii.
37*a*. Asteriastigma macrocarpa. ... ... cclxvi.

IX.—PITTOSPOREÆ.

38. Pittosporum tetraspermum, Anal. Pl. II. fig. 8.

X.—POLYGALEÆ.

39. Xanthophyllum angustifolium, Anal. Pl. III. fig. 2.
40. „ virens, Anal. Pl. III. fig. 2.
41. „ Arnottianum, Anal. Pl. III. fig. 2.

XI.—TAMARISCINEÆ.

42. Tamarix ericoides, Anal. Pl. III. fig. 1.
Trichaurus. See Tamarix.

XII.—GUTTIFERÆ.

43. Garcinia Cambogia ... . lxxxv.
44. „ Morella. ... ... lxxxvi.
45. „ pictoria. .. .. .. lxxxvii.
46. „ Travancorica. ... ... clxxiii.
Garcinia papilla .. .. lxxxv.
47. Xanthochymus pictorius. ... ... lxxxviii.
Stalagmites. See Xanthochymus.
48. Ochrocarpus longifolius. ... . lxxxix.
Calysaccion longifolium. .. .. lxxxix.
Mammœa. See Ochrocarpus.
49. Calophyllum elatum .. .. ii.
50. „ Wightianum. .. .. xc.
Calophyllum decipiens. ... ... xc.
Calophyllum spurium, ... xc.
51. Kayea stylosa. ... ... cii.
52. Mesua Coromandelina. .. .. lxiv.
Hebradendron Cambogioides, ... lxxxvi.

XIII.—TERNSTRÆMIACEÆ.

53. Ternstræmia gymnanthera ... ... xci.
Cleyera gymnanthera ... . xci.
54. Adinandra lasiopetala, Anal. Pl. III. fig. 3.
Cleyera lasiopetala, Anal. Pl. III. fig. 3.
Sarosanthera lasiopetala, Anal. Pl. III. fig. 3.
55. Eurya Japonica. .. .. xcii.
Eurya Wightiana ... ... xcii.
56. Gordonia obtusa. ... . lxxxiii.
Gordonia parvifolia, ... lxxxiii.
57. Pæciloneuron Indicum ... ... iii.
58. „ pauciflorum ... ... xciii.

XIV.—DIPTEROCARPEÆ.

59. Dipterocarpus Indicus ... ... xciv.
60. Vatica Roxburghiana ... ... xcv.

Tab.

Vatica Tambagaia ... . v.
Vatica laccifera .. .. .. vi.
61. Shorea robusta. .. .. iv.
62. ,, Tambagaia ... ... v.
63. ,, laccifera ... ... vi.
64. Hopea parviflora ... ... vii.
65. ,, Wightiana ... . xcvi.
66. Doona Zeylanica ... ... xcvii.
67. ,, Gardneri ... . xcviii.
68. Vateria Malabarica .. .. lxxxiv.
69. Vateria Indica ... ... lxxxiv.
70. Stemonoporus Gardneri ... ... xcix.
71. ,, acuminatus .. .. c.
72. Monoporandra cordifolia ... ... ci.
72*a*. Balanocarpus utilis. .. .. .. cccxxx.
72*b*. ,, erosa ... . cccxxix.

XV.—MALVACEÆ.

73. Kydia calycina, Anal. Pl. III. fig. 5.
Kydia fraterna, Anal. Pl. III. fig. 5.
Kydia axillaris, Anal. Pl. III. fig. 6.
74. Julostyles angustifolia, Anal. Pl. III. fig. 4.
75. Dicellostyles axillaris, Anal. Pl. III. fig. 6.
76. Hibiscus tiliaceous, Anal. Pl. IV. fig. 1.
77. Thespesia populnea ... ... lxiii.
78. Bombax Malabaricum ... . lxxxii.
Salmalia Malabarica ... . lxxxii.
Bombax heptaphylla. ... . lxxxii.
79. Eriodendron anfractuosum, Anal. Pl. IV. fig. 2.
80. Cullenia excelsa, Anal. Pl. IV. fig. 3.

XVI.—STERCULIACEÆ.

81. Sterculia guttata ... ... cv.
82. ,, Haynii ... ... ccxxx.
83. Heritiera littoralis, Anal. Pl. XI. fig. 6.
84. ,, Papilio ... ... ccxviii.
85. Kleinhovia hospita, Anal. Pl. IV. fig. 4.
86. Helicteres Isora, Anal. Pl. V. fig. 1.
87. Pterospermum rubiginosum ... ... cvi.
88. Eriolœna Hookeriana, Anal. Pl. V. fig 2.
89. ,, quinquelocularis, Anal. Pl. V. fig. 2.
Microclœna quinquelocularis, Anal. Pl. V. fig. 2.
90. Melochia velutina, Anal. Pl. V. fig. 3.
Visenia umbellata, Anal. Pl. V. fig. 3.
91. Abroma angusta, Anal. Pl. V. fig. 4.
92. Guazuma tomentosa ... . cvii.

XVII.—TILIACEÆ.

93. Pityranthe verrucosa .. .. cix.
94. Berrya Ammonilla .. .. .. lviii.
95. Grewia tiliæfolia ... ... cviii.
96. Leptonychia moaccuroides .. .. cxiv.
97. Erinocarpus Nimmonii .. .. cx.
98. Elæocarpus amœnus ... . cxi.
99. ,, ferrugineus .. .. cxii.
100. ,, tuberculatus .. .. cxiii.
101. ,, venustus .. .. clxxiv.
Monocera tuberculata ... ... cxiii.
Monocera ferruginea .. .. .. cxii.

XVIII.—LINEÆ.

102. Erythroxylon Indicum ... . lxxxi.
Sethia Indica. ... . lxxxi.

XIX.—GERANIACEÆ.

103. Averrhoa Bilimbi ... . cxvii.

XX.—RUTACEÆ.

		Tab.
104.	Melicope Indica, Anal. Pl. VI. fig. 1.	
105.	Evodia triphylla, Anal. Pl. VI. fig. 2.	
	Fagara triphylla, Anal. Pl. VI. fig. 2.	
	Xanthoxylum triphyllum, Anal. Pl. VI. fig. 2.	
106.	Xanthoxylum Rhetsa, Anal. Pl. VI. fig. 3.	
107.	„ ovalifolium, Anal. Pl. VI. fig. 3.	
108.	Acronychia pedunculata, Anal. Pl. VI. fig. 4.	
	Cyminosma pedunculata, Anal. Pl. VI. fig. 4.	
109.	Toddalia aculeata, Anal. Pl. VI. fig. 5.	
110.	Glycosmis pentaphylla, Anal. Pl. VI. fig. 6.	
111.	Micromelum pubescens, Anal. Pl. VII. fig. 1.	
112.	Murraya exotica, Anal. Pl. VII. fig. 2.	
113.	Clausena Willdenovii, Anal. Pl. VII. fig. 3.	
114.	Limonia alata, Anal. Pl. VII. fig. 4.	
115.	Atalantia monophylla, Anal. Pl. VII. fig. 5.	
	Sclerostylis. See Atalantia.	
116.	Citrus sp., Anal. Pl. VII. fig. 6.	
117.	Feronia elephantum	cxxi.
118.	Ægle marmelos	clxi.

XXI.—SIMARUBEÆ.

119.	Ailanthus Malabarica	cxxii.
120.	Samadera Indica, Anal. Pl. VIII. fig. 1.	
121.	Balanites Ægyptiaca, Anal. Pl. VIII. fig. 2.	

XXII.—OCHNACEÆ.

122.	Ochna squarrosa, Anal. Pl. VIII. fig. 3.	
123.	Gomphia angustifolia, Anal. Pl. VIII. fig. 4.	

XXIII.—BURSERACEÆ.

124.	Boswellia glabra	cxxiv.
125.	Garuga pinnata	cviii.
126.	Balsamodendron Berryi	cxxvi.
127.	Protium caudatum	cxxv.
	Protium Gileadense	cxxvi.
128.	Canarium brunneum	cxxvii.
129.	„ strictum	cxxviii & Anal. Pl. XVIII. fig 1.
130.	Filicium decipiens	cxxix.
	Rhus decipiens	cxxix.
	Pteridophyllum. See Filicium.	
	Amyris Gileadensis	cxxvi.

XXIV.—MELIACEÆ.

131.	Melia composita	xii.
132.	Melia Azadirachta	xiii.
133.	„ Azedarach	xiv.
	Azadirachta. See Melia.	
134	Mallea Rothii, Anal. Pl. VIII. fig. 5.	
	Ekebergia. See Mallea.	
135.	Dysoxylon macrocarpum	cl.
136.	Sandoricum Indicum	cccxix.
137.	Aglaia Roxburghiana	cxxx.
138.	Amoora Rohituka	cxxxii.
139.	„ Lawii	cxxxiii.
	Milnea. See Aglaia.	
	Nemedra. See Aglaia.	
	Nimmonia. See Amoora.	
140.	Lansium Anamallayanum	cxxxi.
141.	Walsura piscidia, Anal. Pl. VIII. fig. 6.	
142.	Heynea affinis	cxxxiv.
	Heynea trijuga	cxxxiv.
143.	Beddomea simplicifolia	cxxxv.
144.	Carapa Moluccensis	cxxxvi.
	Xylocarpus granatum	cxxxvi.

Tab.

145. Soymida febrifuga ... viii.
146. Chickrassia tabularis ... xi.
147. Cedrela toona ... x.
148. Chloroxylon Swietenia ... xi.

XXV.—CHAILLETIACEÆ.

149. Chailletia gelonioides, Anal. Pl. IX. fig. 1.
Moacurra gelonioides, Anal. Pl. IX. fig. 1.

XXVI.—OLACINEÆ.

150. Olax Wightiana, Anal. Pl. IX. fig. 2.
151. Strombosia Ceylanica ... cxxxvii.
152. Anacolosa densiflora ... cxxxviii.
153. Opilia amentacea, Anal. Pl. IX. fig. 3.
Sphærocarya leprosa ... cxxxvii.
154. Lasianthera apicaulis ... cxxxix.
Urandra. See Lasianthera.
155. Gomphandra coriacea, Anal. Pl. IX. fig. 4.
Platea. See Gomphandra.
156. Apodytes Benthamiana ... xl.
157. Mappia fœtida ... xli.
Stemonurus fœtidus ... cxli.

XXVII.—ILICINEÆ.

158. Ilex denticulata ... cxlii.
159. „ Malabarica ... cxliii.
160. „ Wightiana ... cxlii.

XXVIII.—CELASTRINEÆ.

161. Euonymus crenulatus ... cxliv.
162. Glyptopetalum zeylanicum, Anal, Pl. IX. fig. 5.
163. Microtropis ramiflora, Anal. Pl. IX. fig. 6.
164. Lophopetalum Wightianum ... cxlv.
165. Kokoona zeylanica ... cxlvi.
166. Pleurostylia Wightii, Anal. Pl. X. fig. 1.
167. Celastrus Senegalensis, Anal. Pl. X. fig. 2.
Celastrus montana, Anal. Pl. X. fig. 2.
168. Kurrimia Ceylanica ... cxlvii.
169. „ Indica ... cxx.
Trochisandra Indica ... cxx.
170. Elæodendron Roxburghii ... cxlviii.
Neerija. See Elæodendron.
171. Hippocratea Arnottiana, Anal. Pl. X. fig. 3.
172. Salacia oblonga, Anal. Pl. X. fig. 4.

XXIX.—RHAMNEÆ.

173. Zizyphus jujuba ... cxlix.
174. Colubrina Asiatica, Anal. Pl. X. fig. 5.
175. Rhamnus hirsutns, Anal. Pl. X. fig. 6.
176. Scutia Indica, Anal. Pl. XI. fig. 1.

XXX.—SAPINDACEÆ.

177. Hemigyrosa canescens ... cli.
„ deficiens ... ccxxxi
178. Schmidelia hispida ... clii.
179. Schleichera trijuga ... cxix.
180. Glenniea zeylanica ... cliii.
181. Sapindus emarginatus ... cliv.
Sapindus unijugus ... cliii.
Ornitrophe. See Schmidelia
Allophyllus. See Schmidelia
Cupania canescens ... cli.
182. Nephelium stipulaceum ... clv.
183. Pometia eximea ... clvii.
184. Euphoria Longana ... clvi.
Scytale Longana ... clvi.

Tab.

Dimocarpus Longana ... . clvi.
Nephelium Longana .. .. clvi.
185. Harpullia imbricata ... . clviii.
186. Dodonœa viscosa, Anal. Pl. XI. fig. 2.
Dodonœa Burmaniana, Anal. Pl. XI. fig. 2.
187. Turpinia Nepalensis ... . clix.
Streptostigma. See Harpullia.
Otonychium. See Harpullia.
Eccemanthus. See Pometia.

XXXI.—SABIACEÆ.

188. Meliosma Arnottiana ... . clx.
189. ,, pungens ... ... clx.
Millingtonia Arnottiana ... ... clx.

XXXII.—ANACARDIACEÆ.

190. Rhus Mysorensis, Anal. Pl. XI. fig. 3.
191. Mangifera Indica .. .. clxii.
192. Anacardium occidentale ... . clxiii.
193. Gluta Travancorica ... ... lx.
194. Nothopegia Colebrookiana ... ... clxiv.
Glycicarpus. See Nothopegia.
195. Buchanania latifolia ... ... clxv.
196. Solenocarpus Indica .. .. ccxxxiii.
197. Odina Wodier ... ... cxxiii.
198. Semecarpus Anacardium .. .. clxvi.
199. ,, Travancorica ... . ccxxxii.
200. Holigarna longifolia ... ... clxvii.
201. Campnosperma Zeylanica ... . clxviii.
202. Spondias mangifera ... ... clxix.

XXXIII.—CONNARACEÆ.

203. Rouroa santaloides, Anal. Pl. XI. fig. 4.
204. Connarus pinnatus, Anal. Pl. XI. fig. 5.
205. Ellipanthus unifoliatus .. .. clxx.

XXXIV.—LEGUMINOSÆ.

206. Indigofera pulchella, Anal. Pl. XII. fig. 1.
207. Mundulea suberosa, Anal. Pl. XII. fig. 2.
Robinia suberosa, Anal. Pl. XII. fig. 2.
Tephrosia suberosa, Anal. Pl. XII. fig. 2.
208. Sesbania Ægyptiaca, Anal. Pl. XII. fig. 3.
209. Ougeinia dalbergioides ... . xxxvi.
210. Desmodium cephalotes, Anal. Pl. XII. fig. 4.
211. Erythrina stricta .. .. clxxv.
212. ,, Indica ... ... clxxv.
213. Butea frondosa ... ... clxxvi.
214. Dalbergia latifolia .. .. xxiv.
215. ,, Sissoo .. .. xxv.
Dalbergia Mooniana ... ... clxxxvii.
216. Pterocarpus marsupium ... ... xxi.
217. ,, santalinus .. .. xxii.
218. ,, Indicus ... . xxiii.
219. Pongamia glabra ... . clxxvii.
220. Calpurnia aurea, Anal. Pl. XII. fig. 5.
Virgilia aurea, Anal. Pl. XII. fig. 5.
221. Sophora interrupta, Anal. Pl. XII. fig. 6.
222. Ormosia Travancorica ... . xlv.
223. Pericopsis Mooniana ... ... clxxxvii.
224. Cæsalpinia Sapan, Anal. Pl. XII. fig. 1.
225. Acrocarpus fraxinifolius .. .. xliv.
226. Poinciana elata ... ... clxxviii.
227. Parkinsonia aculeata, Anal. Pl. XIII. fig. 2.
228. Cassia florida ... . clxxix.
229. Cassia Roxburghii .. .. clxxx.

		Tab.
230.	Dialium ovoideum	clxxxi.
231.	Bauhinia racemosa	clxxxii.
232.	Humboldtia unijuga	clxxxiii.
233.	Tamarindus Indica	clxxxiv.
234.	Saraca Indica	lvii.
	Jonesia Asoca	lvii.
235.	Crudia Zeylanica	cxc.
236.	Hardwickia binata	xxvi.
237.	„ pinnata	cclv.
238.	Cynometra ramiflora	cccxv.
239.	„ cauliflora	cccxv.
240.	„ Travancorica	cccxvi.
241.	Adenanthera pavonina	xlvi.
242.	Prosopis spicigera	lvi.
243.	Dichrostachys cinerea	clxxxv.
244.	Xylia dolabriformis	clxxxvi.
	Inga xylocarpa	clxxxvi.
245.	Acacia Arabica	xlvii.
246.	„ leucophlœa	xlviii.
247.	„ Catechu	xlix.
248.	„ Sundra	l.
249.	„ ferruginea	li.
250.	„ farnesiana	lii.
	Acacia speciosa	liii.
	Acacia odoratissima	liv.
	Acacia stipulata	lv.
	Acacia amara	lxi.
251.	Albizzia Lebbeck	liii.
252.	„ odoratissima	liv.
253.	Albizzia stipulata..	lv.
254.	„ amara ...	lxi.
	Albizzia speciosa ...	liii.
255.	Pithecolobium dulce	clxxxviii.
256.	„ Anamalayanum	clxxxix.
257.	Calliandra cynometroides	cccxvii.

XXXV.—ROSACEÆ.

258.	Parinarium Indicum	cxci.
259.	Pygeum Ceylanicum	lix.
	Pygeum acuminatum	lix.
	Polyodontia. See Pygeum.	
260.	Cotoneaster buxifolia, Anal. Pl. XIII. fig. 3.	
261.	Photinia Notoniana	cxcii.

XXXVI.—RHIZOPHORACEÆ.

262.	Rhizophora mucronata, Anal. Pl. XIII. fig. 4.	
	Rhizophora candelaria, Anal. Pl. XIII. fig. 4.	
263.	Ceriops Candolleana, Anal. Pl. XIII. fig. 5.	
264.	Kandelia Rheedii, Anal. Pl. XIII. fig. 6.	
265.	Bruguiera Rheedii, Anal. Pl. XIV. fig. 1.	
266.	Carallia integerrima	cxciii.
267.	Weihea Zeylanica...	cxciv.
	Anstrutheria. See Weihea.	
268.	Blepharistemma corymbosa, Anal. Pl. XIV. fig. 2.	
269.	Anisophyllea Zeylanica	cxcv.
	Tetracrypta. See Anisophyllea.	

XXXVII.—COMBRETACEÆ.

270.	Terminalia tomentosa	xvii.
271.	„ paniculata	xviii.
272.	„ Arjuna	xxviii.
273.	„ Belerica	xix.
274.	„ catappa	xx.
275.	„ chebula	xxvii.
	Terminalia glabra	xvii.
	Terminalia coriacea	xvii.

		Tab.
276.	Anogeissus latifolius	xv.
277.	,, acuminatus	xvi.
	Conocarpus latifolius	xv.
	Conocarpus acuminatus	xvi.
278.	Lumnitzera racemosa, Anal. Pl. XXI. fig. 2.	
279.	Gyrocarpus Jacquini	cxcvi.

XXXVIII.—MYRTACEÆ.

280.	Rhodomyrtus tomentosus, Anal. Pl. XIV. fig. 3.	
281.	Eugenia jambolana	cxcvii.
282.	,, Malabarica	cxcix.
283.	,, alternifolia	cxcviii.
284.	,, Zeylanica	ccii.
285.	,, cylindrica	cci.
286.	,, hemisphærica	cciii.
287.	,, floccosa	cc.
	Syzygium jambolanum	cxcvii.
	Syzygium alternifolium	cxcviii.
	Acmene zeylanica	ccii.
	Jambosa cylindrica	cci.
	Strongylocalyx hemisphærica	cciii.
288.	Barringtonia acutangula	cciv.
289.	Careya arborea	ccv and Anal. Pl. XVIII. fig. 2.

XXXIX.—MELASTOMACEÆ.

290.	Memecylon umbellatum	ccvi.
291.	,, capitellatum	ccvi.

XL.—LYTHRARIEÆ.

292.	Woodfordia tomentosa, Anal. Pl. XIV. fig. 4.	
	Grislea tomentosa, Anal. Pl. XIV. fig. 4.	
293.	Pemphis acidula, Anal. Pl. XIV. fig. 5.	
	Maclellandia Griffithiana, Anal. Pl. XIV. fig. 5.	
294.	Lawsonia alba, Anal. Pl. XIV. fig. 6.	
295.	Lagerstrœmia Regiuæ	xxix.
296.	,, microcarpa	xxx.
297.	,, parviflora	xxxi.
298.	,, lanceolata	xxxii.
299.	Sonneratia acida, Anal. Pl. XV. fig. 1.	
300.	Axinandra Zeylanica	ccvii.

XLI.—SAMYDACEÆ.

301.	Casearia varians	ccviii.
302.	Osmelia Gardneri	ccix.
303.	Homalium Ceylanicum	ccx.
304.	Homalium Travancoricum	ccxi.
	Blackwellia tetrandra	ccx.
	Cordylanthus. See Homalium	

XLII.—DATISCEÆ.

305.	Tetrameles nudiflora	ccxii.
	Tetrameles Grahamiana	ccxii.

XLIII.—ARALIACEÆ.

306.	Aralia Malabarica, Anal. Pl. XV. fig. 2.	
307.	Pentapanax Leschenaultii, Anal. Pl. XV. fig. 3.	
308.	Polyscias acuminata	ccxiii.
309.	Heptapleurum racemosum	ccxiv.
310.	*Hedera acuminata*	ccxiii.
	Hedera racemosa	ccxiv.

XLIV.—CORNACEÆ.

311.	Alangium Lamarckii	ccxv.
	Alangium decapetalum	ccxv.
	Alangium hexapetalum	ccxv.

Tab.

312. Mastixia arborea ... ... ccxvi.
Bursinopetalum arboreum .. .. ccxvi.
Bursinopetaum tetrandrum ... . ccxvi.

XIV.—CAPRIFOLIACEÆ.

313. Lonicera ligustrina, Anal. Pl. XV. fig. 5.
314. Viburnum punctatum .. .. ccxvii.
Viburnum acuminatum ... ... ccxvii.

XLVI.—RUBIACEÆ.

315. Sarcocephalus cordatus .. .. cccxviii.
Nauclea cadamba. See Anthocephalus.
316. Adina cordifolia ... ... xxxiii. and Anal. Pl. XXIX. fig. 2.
Naucla cordifolia. See Adina.
317. Stephegyne parvifolia ... . xxxiv. and Anal. Pl. XXIX. fig. 1.
Nauclea parvifolia. See Stephegyne.
318. Anthocephalus cadambus ... ... xxxv.
319. Nauclea elliptica, Anal. Pl. XXIX. fig. 3.
Nauclea coadunata .. .. cccxviii.
320. Hymenodyction obovatum ... ... ccxix.
321. ,, utile .. .. ccxix.
322. Wendlandia Notoniana ... ... ccxxiv.
323. Byrsophyllum tetrandrum .. .. cccxxvi.
324. Gardenia lucida, Anal. XV. fig. 6.
325. ,, turgida, Anal. Pl. XV. fig. 6.
326. Randia dumetorum, Anal. Pl. XVI. fig. 1.
327. ,, uliginosa, Anal. Pl. XVI. fig. 1.
327*a*. Nargedia macrocarpa ... ... cccxxviii.
328. Webera Asiatica, Anal. Pl. XVI. fig. 2.
Stylocoryne Webera, Anal. Pl. XVI. fig 2.
329. Diplospora apiocarpa ... . ccxxiii.
Discospermum apiocarpum ... ... ccxxiii.
330. Mussænda frondosa, Anal. Pl. XVI. fig. 3.
331. Urophyllum Zeylanicum, Anal. Pl. XVI. fig. 5.
Axanthes zeylanica, Anal. Pl. XVI. fig. 5.
332. Ixora parviflora ... ... ccxxii.
333. Pavetta involucrata, Anal. Pl. XXIX. fig. 6.
334. Coffea Arabica, Anal. Pl. XVIII. fig. 1.
335. Scyphiphora Malayana, Anal. Pl. XXIX. fig. 5.
336. Timonius jambosella, Anal. Pl. XVI. fig. 4.
337. Dichilantho Zeylanica, Anal. Pl. XV. fig. 4.
338. Guettarda speciosa, Anal. Pl. XVII. fig. 2.
339. Scyphostachys coffeoides, Anal. Pl. XVI. fig. 6.
340. Plectronia didyma ... ... ccxxi.
Canthium. See Plectronia.
Canthium umbellatum ... . ccxxi.
341. Morinda citrifolia ... . ccxx.
342. Prismatomeris albidiflora, Anal. Pl. XXIX. fig. 4.
343. Lasianthus venulosus, Anal. Pl. XVII. fig. 5.
Mephitidea. See Lasianthus.
344. Hamiltonia suaveolens, Anal. Pl. XVII. fig. 3.
345. Psychotria elongata, Anal. Pl. XVII. fig. 6.
346. Saprosma Wightii, Anal. Pl. XVII. fig. 4.
346*a*. Octotropis Travancorica ... ... cccxxvii.
Grumilea. See Psychotria.
Dysodidendron. See Saprosma.
Epithinia. See Scyphiphora.
Serissa. See Saprosma.
Nelitris jambosella, Anal. Pl. XVI. fig. 4.
Eupyrena glabra, Anal. Pl. XVI. fig. 4.
Griffithia. See Randia.

XLVII.—COMPOSITÆ.

347. Vernonia volkameriæfolia .. .. ccxxv.
348. Vernonia Wightiana .. .. ccxxvi.
Monosis. See Vernonia.

Tab.

XLVIII.—ERICACEÆ.

349. Vaccinium Leschenaultii ccxxvii
350. Gualtheria fragrantissima, Anal. Pl. XIX. fig. 1.
Gualtheria Leschenaultii, Anal, Pl. XIX. fig. 1.
351. Rhododendron arboreum ... . ccxxviii.

XLIX.—MYRSINEÆ.

352. Mæsa Indica, Anal. Pl. XVIII. fig. 4.
353. Embelia robusta, Anal. Pl. XIX. fig. 2.
354. Myrsine capitellata .. .. ccxxxiv.
355. Ardisia amplexicaulis, Anal. Pl. XVIII. fig. 3.
356. Ægiceras majus, Anal. Pl. XIX. fig. 3.

L.—SAPOTACEÆ.

357. Bassia latifolia ... ... xli.
358. ,, longifolia ... ... xlii.
359. ,, elliptica ... . xliii.
360. ,, neriifolia ... ... ccliv.
361. ,, petiolaris .. .. ccliv.
362. ,, grandis ... . ccliv.
Isonandra acuminata .. .. xliii.
Dasyaulus. See Bassia.
Dichopsis. See Bassia.
363. Mimusops elengi .. .. xl.
364. Achras elengioides ... . ccxxxv.
Sapota elengioides ... . ccxxxv.
365. Chrysophyllum Roxburghii ... . ccxxxvi.

LI.—EBENACEÆ.

366. Diospyros ebenum ... ... lxv.
367. ,, Tupru ... . lxvi.
,, *exsculpta* ... . lxvi.
368. ,, melanoxylon ... ... lxvii.
,, *Wightiana* ... ... lxvii.
369. ,, foliolosa ... ... lxviii.
,, *calycina* ... ... lxviii.
370. ,, embryopteris ... ... lxix.
Embryopteris glutinosa ... ... lxix.
371. Maba oblongifolia, Anal. Pl. XXI. fig. 1.
Macreightia oblongifolia, Anal. Pl. XXI. fig. 1.
372. Maba buxifolia, Anal. Pl. XIX. fig. 4.

LII.—STYRACEÆ.

373. Symplocos Gardneriana ... . ccxxxvii.
374. ,, oligandra, Anal. Pl. XX. fig. 1.

LIII.—JASMINEÆ.

375. Nyctanthes arbor-tristis ... . ccxl.
376. Olea glandulifera ... ... ccxxxviii.
377. Ligustrum Perottetti, Anal. Pl. XIX. fig. 5.
378. Chionanthus intermedia .. .. ccxxxix.
379. ,, Malabarica ... ... ccxxxix.

LIV.—APOCYNEÆ.

380. Willughbeia Ceylanica, Anal. Pl. XX. fig. 4.
381. Ophioxylon densiflorum, Anal. Pl. XX. fig. 2.
Ophioxylon Neilgherriense, Anal. Pl. XX. fig. 2.
382. Carissa carandas, Anal. Pl. XIX. fig. 6.
383. Hunteria Zeylanica ... ... cclxv.
384. Alyxia Ceylanica, Anal. Pl. XX. fig. 5.
385. Tabernamontana verticellata, Anal. Pl. XX. fig. 3.
386. Wrightia tinctoria .. .. ccxli.
387. Alstonia scholaris ... . ccxlii.
388. Holarrhena antidysenterica, Anal. Pl. XX. fig. 6.

Tab.

LV.—LOGANIACEÆ.

389. Strychnos nux-vomica ... ... ccxliii.
390. Buddleia Asiatica, Anal. Pl. XXI. fig. 4.
391. Fagræa Coromandelina ... ... ccxliv.
392. Gærtnera Kœnigii, Anal. Pl. XXI. fig. 3.

LVI.—BORAGINEÆ.

393. Cordia Wallichii ... . ccxlv.
394. ,, myxa ... . ccxlv.
395. Ehretia lævis ... . ccxlvi.

LVII.—SALVADOREÆ

396. Salvadora Wightiana ... . ccxlvii.

LVIII.—BIGNONIACEÆ.

397. Bignonia xylocarpa ... . lxx.
398. Millingtonia hortensis ccxlix.
399. Spathodea falcata ... ... lxxi.
400. Stereospermum chelonoides ... . lxxii.
401. Pajanelia Rheedii, Anal. Pl. XXI. fig. 5.
402. Schrebera swietenioides ... . ccxlviii.

LIX.—VERBENACEÆ.

403. Vitex altissima .. .. ccliii.
404. Gmelina arborea ... ... ccliii.
405. Premna tomentosa .. .. ccli.
406. Callicarpa lanata, Anal. Pl. XXI. fig. 6.
407. Clerodendron infortunatum, Anal. Pl. XXII. fig. I.
408. Tectona grandis ... ... ccl.
409. Avicennia officinalis, Anal. Pl. XXII. fig. 2.

LX.—NYCTAGINEÆ.

410. Pisonia aculeata, Anal. Pl. XXII. fig. 3.

LXI.—MYRISTICEÆ.

411. Myristica laurifolia ... ... cclxvii.
412. ,, magnifica ... . cclxviii.
413. ,, Malabarica ... . cclxix.
414. ,, Farquhariana .. .. cclxx.
415. ,, corticosa ... ... cclxxi.
Knema. See Myristica.
Pyrrhosia. See Myristica.
Horsfieldia. See Myristica.

LXII.—MONIMIACEÆ.

416. Hortonia floribunda, Anal. Pl. XXV. fig. 3.

LXIII.—PROTEACEÆ.

417. Helicia robusta ... . ccci.

LXIV.—THYMELÆACEÆ.

418. Wikstrœmia virgata, Anal. Pl. XXV. fig. 4.
419. Lasiosiphon eriocephalus, Anal. Pl. XXV. fig. 2.
Gnidia eriocephalus, Anal. Pl. XXV. fig. 2.
420. Cansjera Rheedii, Anal. Pl. XXVI. fig. 6.
421. Gyrinops Walla .. .. ccciii.
422. Phaleria cauliflora, Anal. Pl. XXV. fig. 5.
Drymispermum. See Phaleria.

LXV.—ELÆAGNACEÆ.

423. Elœagnus latifolia, Anal. Pl. XXV. fig. I.

Tab.

LXVI.—SANTALACEÆ.

424. Pyrularia Wallichiana .. .. ccciv.
425. Santalum album ... . cclvi.
426. Osyris arborea, Anal. Pl. XXVI. fig. 6-A.

LXVII.—SALICACEÆ.

427. Salix tetrasperma ... ... cccii.

LXVIII.—LAURACEÆ.

428. Cinnamomum Zeylanicum ... . cclxii.
429. Apollonias Arnotii ... . ccxci.
430. Phœbe Wightii ... . cxcii.
431. Haasia Wightii .. .. ccxcviii.
432. Machilus macrantha ... ... cclxiv.
433. Alseodaphne semicarpifolia ... ... ccxcvii.
434. Beilschmiedia fagifolia ... ... clxiii.
435. Cryptocarya Wightiana .. .. ccxcix.
436. Tetranthera Wightiana ... ... ccxciii.
437. *Cylicodaphne.* See Tetranthera.
438. *Lepidadenia.* See Tetranthera.
439. Actinodaphne salicina cxcv
440. ,, Hookeri ... ... cxcvi.
441. ,, angustifolia ... ... cxcv.
442. Litsœa zeylanica ... ... ccxciv.
443. Hernandia peltata ... ... ccc.

LXIX.—EUPHORBIACEÆ.

444. Actephila excelsa, Anal. Pl. XXIII. fig. 3.
Anomospermum. See Actephila.
445. Phyllanthus emblica ... . cclviii.
446. ,, Indicus, Anal. Pl. XXIV. fig. 6.
Emblica officinalis .. .. cclviii.
Prosorus India, Anal. Pl. XXIV. fig. 6.
447. Glochidion Neilgherriense ... . cclxxvii.
448. Breynia rhamnoides, Anal. Pl. XXIV. fig. 2.
Melanthesa. See Breynia.
449. Putranjiva Roxburghii ... . cclxxv.
450. ,, Zeylanica ... . clxxv.
Palenga. See Putranjiva.
451. Securinega leucopyrus, Anal. Pl. XXIV. fig. 4 ♂ only
Flueggia. See Securinega.
452. Mischodon Zeylanicus .. .. .. ccxc.
453. Baccaurea sapida .. .. cclxxx.
Pierardia. See Baccaurea.
454. Bischoffia Javanica ... . cclix.
Andrachne. See Bischoffia.
Stylodiscus. See Bischoffia.
Microelus. See Bischoffia.
455. Hemicyclia elata ... ... cclxxix.
456. Cyclostemon macrophyllus ... . cclxxviii.
Sphragidia. See Cyclostemon.
457. Aporosa Lindleyana .. .. cclxxxvi.
Scepa Lindleyana. See Aporosa.
458. Antidesma Bunius, Anal. Pl. XXIV. fig. 3.
459. Briedelia retusa .. .. cclx.
Briedelia spinosa ... . cclx.
460. Cleistanthus patulus, Anal. Pl. XXIV. fig. 4.
461. ,, pallidus, Anal. Pl. XXIV. fig. 4.
Amanoa. See Cleistanthus.
462. Lebidieropsis orbicularis, Anal. Pl. XXIV. fig. 5.
Cluytia collina. See Lebidieropsis.
463. Croton scabiosum .. .. cclxxxiii.
464. ,, aromaticum ... ... cclxxxiii.

		Tab.
465.	Aleurites Moluccana	cclxxvi.
	Aleurites triloba	cclxxvi.
466.	Agrostistachys Indica, Anal. Pl. XXIV. fig. 2.	
467.	Sarcoclinium longifolium, Anal. Pl. XXIV. fig. 1.	
468.	Cœlodepas calycina	cccxx.
469.	Cephalocroton Indicum	cclxi.
	Adenochlæna. See Cephalocroton.	
470.	Podadenia Thwaitesii	cclxxxii.
471.	Trewia nudiflora	cclxxxi.
472.	Mallotus Philippinensis	cclxxxix.
	Rottlera urandra. See Cleidion.	
	Rottlera tinctoria. See Mallotus.	
	Rottlera Thwaitesii. See Podadenia.	
473.	Cleidion Javanicum	cclxxii.
	Tetraglossa. See Cleidion.	
474.	Macaranga Indica	cclxxxvii.
475.	„ tomentosa	cclxxxvii.
476.	Homonoya riparia, Anal. Pl. XXIV. fig. 1.	
	Adelia. See Homonoya.	
	Spathiostemon. See Homonoya.	
	Hœmatospermum. See Homonoya.	
477.	Givotia rottleriformis	cclxxxv.
478	Trigonostemon Lawianus	cclxxiii.
	Dimorphocalyx. See Trigonostemon.	
479.	Ostodes Zeylanica	cclxxiv.
	Desmostemon. See Ostodes.	
480.	Codiœum umbellatum, Anal. Pl. XXIII. fig. 6.	
	Blachia. See Codiœum.	
481.	Chœtocarpus castanocarpus	cclxxxiv.
482.	„ coriaceus	cclxxxiv.
483.	Gelonium lanceolatum, Anal. Pl. XXII. fig. 6.	
484.	Excœcaria Cochinchinensis, Anal. Pl. XXII. fig. 5.	
485.	„ insignis, Anal. Pl. XXII. fig. 5.	
	Falconeria. See Excœcaria.	
486.	Euphorbia antiquorum, Anal. Pl. XXII. fig. 4.	
487.	Daphniphyllum glaucescens	cclxxxviii.
	Daphniphyllum Roxburghii	clxxxviii.
	Goughia. See Daphniphyllum.	
488.	Sarcococca saligna, Anal. Pl. XXIV. fig. 5.	
	Sarcococca trinervia, Anal. Pl. XXIV. fig. 5.	

LXX.—URTICEÆ.

489.	Ulmus integrifolia	cccx.
490.	Sponia Wightii	cccxi.
491.	Celtis Roxburghii	cccxii.
	Celtis trinervia	cccxii.
492.	Gironniera reticulata	cccxiii.
493.	„ subœqualis	cccxiii.
	Helminthospermum. See Gironniera.	
	Holopteleœa. See Ulmus.	
494.	Artocarpus hirsuta	cccviii.
495.	„ nobilis	cccix.
	Lepurandra. See Antiaris.	
496.	Antiaris innoxia	cccvii.
	Antiaris saccidora	cccvii.
497.	Ficus religiosa	cccxiv.
498.	„ Tsiala	cccxiv.
	Urostigma. See Ficus.	
499.	Allœanthus Zeylanicus	cccv.
500.	Streblus aspera, Anal. Pl. XXVI. fig. 1.	
	Trophis aspera. See Streblus.	
	Epicarpurus. See Streblus and Taxotrophis.	
501.	Cudranus Rumphii, Anal. Pl. XXVII. fig. 1.	
	Trophis spinosa. See Cudranus and Taxotrophis.	
	Maclura. See Cudranus.	

Tab.

502. Plecospermum spinosum, Anal. Pl. XXVI. fig. 2.
Batis spinosa. See Plecospermum.
503. Taxotrophis Roxburghii, Anal. Pl. XXVI. fig. 3.
504. „ Zeylanica, Anal. Pl. XXVI. fig. 3.
505. Bohmeria Travancorica, Anal. Pl. XXVII. fig. 2.
506. Laportea crenulata ... . cccvi.
Urtica crenulata. See Laportea.
507. Morocarpus longifolius, Anal. Pl. XXVI. fig. 5.
Debregeasia velutina. See Morocarpus.
508. Oreocnide sylvatica, Anal. Pl. XXVI. fig. 4.
Villebrunea sylvatica. See Oreocnide.
Conocephalus niveus. See Morocarpus.

LXXI.—CONIFERÆ.

509. Podocarpus latifolia ... ... cclvii.

LXXII.—GRAMINEÆ.

510. Arundinaria Wightiana, Anal. Pl. XXVIII. fig 1.
511. Bambusa arundinacea .. .. cccxxi.
512. Oxytenanthera Thwaitesii ... . cccxxii.
513. Teinostachyum Wightii ... ... cccxxiii.
514. Beesha Travancorica ... . cccxxiv.
515. Dendrocalamus strictus .. .. cccxxv.

Addenda.

DIPTEROCARPEÆ.

516. Balanocarpus erosa, *Bedd.* ... ... cccxxix.
517. „ utilis, *Bedd.* ... ... cccxxx.

RUBIACEÆ.

518. Octotropis Travancorica, *Bedd.* ... ... cccxxvii.
519. Nargedia macrocarpa, *Thw.* ... ... cccxxviii.

ALPHABETICAL INDEX

TO THE TREES AND SHRUBS FIGURED.

The Italics are synonyms.

A.

	Tab.
Aberia Gardneri, Anal. Pl. II. fig. 5.	
Abroma angusta, Anal. Pl. V. fig. 4.	
Acacia amara	lxi.
Acacia Arabica	xlvii.
„ Catechu	xlix.
„ Farnesiana	lii
„ ferruginea	li.
„ leucophlœa	xlviii.
Acacia odoratissima	liv.
Acacia speciosa	liii.
Acacia stipulata	lv.
Acacia sundra	l.
Achras elengioides	ccxxxv.
Acmene zeylanica	ccii.
Acrocarpus fraxinifolius	xliv.
Acronychia pedunculata, Anal. Pl. VI. fig. 4.	
Actephila excelsa, Anal. Pl. XXIII. fig. 3.	
Actinodaphne angustifolia	cxcv.
„ Hookeri	cxcvi.
„ salicina	cxcv.
Adelia. See Homonoya	
Adenanthera pavonina	xlvi.
Adenochlœna. See Cephalocroton.	
Adina cordifolia	xxxiii. & Anal. Pl. XXIX. fig. 2.
Adinandra lasiopetala, Anal. Pl. III. fig. 3.	
Ægiceras majus, Anal. Pl. XIX. fig. 3.	
Ægle marmelos	clxi.
Aglaia Roxburghiana	cxxx.
Agrostistachys Indica, Anal. Pl. XXIV. fig. 2.	
Ailanthus Malabarica	cxxii.
Alangium decapetalam	ccxv.
Alangium hexapetalum	ccxv.
Alangium Lamarckii	ccxv.
Albizzia amara	lxi.
„ Lebbeck	liii.
„ odoratissima	liv.
Albizzia speciosa	liii.
Albizzia stipulata	lv.
Aleurites Moluccana	cclxxvi.
Aleurites triloba	cclxxvi.
Allœanthus Zeylanicus	cccv.
Allophyllus. See Schmidelia.	

	Tab.
Alphonsea Madrasapatana	lxxvi.
Alseodaphne semicarpifolia	ccxcvii.
Alsodeia zeylanica	ccxxix.
Alstonia scholaris	ccxlii.
Alyxia Ceylanica, Anal. Pl. XX. fig. 5.	
Amanoa. See Cleistanthus.	
Amoora Lawii	cxxxiii.
,, Rohituka	cxxxii.
Amyris Gileadensis	cxxvi.
Anacardium occidentale	clxiii.
Anacolosa densiflora	cxxxviii.
Andrachne. See Bischoffia.	
Anisophyllea Zeylanica	cxcv.
Anogeissus acuminatus	xvi.
,, latifolius	xv.
Anomospermum. See Actephila.	
Anstrutheria. See Weihea.	
Anthocephalus Cadambus	xxxv.
Antiaris innoxia	cccvii.
Antiaris saccidora	cccvii.
Antidesma Bunius, Anal. Pl. XXIV. fig. 3.	
Apodytes Benthamiana	cxl.
Apollonias Arnottii	ccxci.
Aporosa Lindleyana	cclxxxvi.
Aralia Malabarica, Anal. Pl. XV. fig. 2.	
Ardisia amplexicaulis, Anal. Pl. XVIII. fig. 3.	
Artocarpus hirsutus	cccviii.
,, nobilis	cccix.
Arundinaria Wightiana, Anal. Pl. XXVIII. fig. 1.	
Atalantia monophylla, Anal. Pl. VII. fig. 5.	
Averrhoa Bilimbi	cxvii.
Avicennia officinalis, Anal. Pl. XXII. fig. 2.	
Axanthes Zeylanica, Anal. Pl. XVI. fig. 5.	
Axinandra Zeylanica	ccvii.
Azadirachta. See Melia.	

B.

Baccaurea sapida	cclxxx.
Balanites Ægyptiaca, Anal. Pl. VIII. fig. 2.	
Balanocarpus erosa	cccxxix.
,, utilis	cccxxx.
Balsamodendron Berryi	cxxvi.
Bambusa arundinacea	cccxxi.
Barringtonia acutangula	cciv.
Bassia elliptica	xliii.
,, grandis	ccliv.
,, latifolia	xli.
,, longifolia	xlii.
,, neriifolia	ccliv.
,, petiolaris	ccliv.
Batis spinosa. See Plecospermum.	
Bauhinia racemosa	clxxxii.
Beddomea simplicifolia	cxxxv.
Beesha Travancorica	cccxxiv.
Beilschmiedia fagifolia	clxiii
Berberis Leschenaultii, Anal. Pl. II. fig. 2.	
Berberis Nepalensis, Anal. Pl. II. fig. 2.	

	Tab.
Berrya Ammonilla	lviii.
Bignonia xylocarpa	lxx.
Bischoffia Javanica	cclix.
Bixa Orellana	lxxix.
Blachia. See Codiæum.	
Blackwellia tetrandra	ccx.
Blepharistemma corymbosa, Anal. Pl. XIV. fig. 2.	
Bocagea Dalzellii, Anal. Pl. I. fig. 4.	
Bohmeria Travancoria, Anal. Pl. XXVII. fig. 2.	
Bombax heptaphylla	lxxxii.
Bombax Malabaricum	lxxxii.
Boswellia glabra	cxxiv.
Breynia rhamnoides, Anal. Pl. XXIV. fig. 2	
Briedelia retusa	cclx.
Briedelia spinosa	cclx.
Bruguiera Rheedii, Anal. Pl. XIV. fig. 1.	
Buchanania latifolia	clxv.
Buddleia Asiatica, Anal. Pl. XXI. fig. 4.	
Bursinopetalum arboreum	ccxvi.
Bursinopetalum tetrandrum	ccxvi.
Butea frondosa	clxxvi.
Byrsophyllum tetrandrum	cccxxvi,

C.

Cælodepas calycina	cccxx.
Cæsalpinia Sapan, Anal. Pl. XII. fig. 1.	
Calliandra cynometroides	cccxvii.
Callicarpa lanata, Anal. Pl. XXI. fig. 6.	
Calophyllum decipiens	xc.
Calophyllum elatum	ii.
Calophyllum spurium	xc.
Calophyllum Wightianum	xc.
Calpurnia aurea, Anal. Pl. XII. fig. 5.	
Calysaccion longifolium	lxxxix.
Campnosperma Zeylanica	clxviii.
Canarium brunneum	cxxvii.
„ strictum	cxxviii. and Anal. Pl. XVIII. fig. 1.
Canthium. See Plectronia	
Canthium umbellatum	ccxxi.
Cansjera Rheedii, Anal. Pl. XXVI. fig. 6.	
Capparis stylosa, Anal. Pl. II. fig. 3.	
Carallia integerrima	cxciii.
Carapa Moluccensis	cxxxvi.
Careya arborea	ccv. and Anal. Pl. XVIII. fig. 2.
Carissa carandas, Anal. Pl. XIX. fig. 6.	
Casearia varians	ccviii.
Cassia florida	clxxix.
„ Roxburghii	clxxx.
Cedrela Toona	x.
Celastrus montana, Anal. Pl. X. fig. 2.	
Celastrus Senegalensis, Anal. Pl. X. fig. 2.	
Celtis Roxburghii	cccxii.
Celtis trinervia	cccxii.
Cephalocroton Indicum	cclxi.
Ceriops Candolleana, Anal. Pl. XIII. fig. 5.	
Chætocarpus castanocarpus	cclxxxiv.
„ coriaceous	cclxxxiv.

	Tab.
Chailletia gelonioides, Anal. Pl. IX. fig. 1.	
Chickrassia tabularis	xi.
Chionanthus intermedia	ccxxxix.
„ Malabarica	ccxxxix.
Chloroxylon swietenia	xi.
Chrysophyllum Roxburghii	ccxxxvi.
Cinuamomum zeylanicum	cclxii
Citrus sp., Anal. Pl. VII. fig. 6	
Clausena Willdenovii, Anal. Pl. VII. fig. 3.	
Cleidion Javanicum	cclxxii.
Cleistanthus pallidus, Anal. Pl. XXIV. fig. 4.	
„ patulus, Anal. Pl. XXIV. fig. 4.	
Clerodendrou infortunatum, Anal. Pl. XXII. fig. 1.	
Cleyera gymnanthera	xci.
Cleyera lasiopetala, Anal. Pl. III. fig. 3.	
Cluytia collina. See Lebidieropsis.	
Cocculus cordifolius, Anal. Pl. II. fig. 1.	
Cochlospermum gossypium	clxxi.
Codiæum umbellatum, Anal. Pl. XXIII. fig. 6.	
Coffea Arabica, Anal. Pl. XVIII. fig. 1.	
Colubrina Asiatica, Anal. Pl. X. fig. 5.	
Connarus pinnatus, Anal. Pl. XI. fig. 5.	
Conocarpus acuminatus	xvi.
Conocarpus latifolius	xv.
Conocephalus niveus. See Morocarpus.	
Cordia myxa	ccxlv.
„ Wallichii	ccxlv.
Cordylanthus. See Homalium	
Cotoneaster buxifolia, Anal. Pl. XIII. fig. 3.	
Cratæva religiosa	cxvi.
Crotou aromaticum	cclxxxiii.
„ scabiosum	cclxxxiii.
Crudia zeylanica	cxc.
Crytocarya Wightiana	ccxcix.
Cudranus Rumphii, Anal. Pl. XXVII. fig. 1.	
Cullenia excelsa, Anal. Pl. IV. fig. 3.	
Cupania canescens	cli.
Cyathocalyx Zeylanicus, Anal. Pl. I. fig. 6.	
Cyclostemon macrophyllus	cclxxviii.
Cylicodaphne. See Tetranthera.	
Cyminosma pedunculata, Anal. Pl. VI. fig. 4.	
Cynometra cauliflora	cccxv.
„ ramiflora	cccxv.
„ Travancorica	cccxvi.

D.

Dalbergia latifolia	xxiv.
Dalbergia Mooniana	clxxxvii.
Dalbergia sissoo	xxv.
Daphniphyllum glaucescens	cclxxxviii.
Daphniphyllum Roxburghii	cclxxxviii.
Dasyaulus. See Bassia.	
Debregreasia velutina. See Morocarpus.	
Dendrocalamus strictus	cccxxv.
Desmodium sephalotes, Anal. Pl. XII. fig. 4.	
Desmostemon. See Ostodes.	
Dialium ovoideum	clxxxi.
Dicellostyles axillaris, Anal. Pl. III. fig. 6.	

			Tab.
Dichilanthe Zeylanica, Anal. Pl. XV. fig. 4.			
Dichopsis. See Bassia.			
Dichrostachys cinerea	...	...	... clxxxv
Dillenia pentagyna	...	...	... civ.
„ speciosa	...	...	... ciii.
Dimocarpus longana	...	...	.. clvi.
Dimorphocalyx. See Trigonostemon.			
Diospyros *calycina*	...	...	... lxviii.
„ ebenum	...	...	... lxv.
„ embryopteris	...	...	... lix.
„ *exsculpta*	...	...	... lxvi.
„ foliolosa	...	...	... lxviii.
„ melanoxylon	...	...	... lxvii.
„ Tupru	...	...	... lxvi.
„ *Wightiana*	...	...	... lxvii.
Diplospora apiocarpa	...	...	... cccxxiii.
Dipterocarpus Indicus	...	...	... xciv.
Discospermum apiocarpum,	..	...	... ccxxiii.
Dodonœa Burmannniana, Anal. Pl. XI. fig. 2.			
Dodonæa viscosa, Anal. Pl. XI. fig. 2.			
Doona Gardneri	...	...	... xcviii.
„ Zeylanica	...	...	... xcvii,
Drymispermum. See Phaleria.			
Dysodidendron. See Saprosma.			
Dysoxylon macrocarpum	...	...	... cl.

E.

Eccremanthus. See Pometia.			
Ehretia lævis	..	...	... ccxlvi
Ekebergia. See Mallea.			
Elæagnus latifolia, Anal. Pl. XXV. fig. 1.			
Elœocarpus amœnus	...	...	... cxi.
„ ferrugineus	...	...	... cxii.
„ tuberculatus	...	...	... cxiii.
„ venustus	...	..	... clxxiv.
Elœodendron Roxburghii	...	...	... cxlviii.
Ellipanthus unifoliatus	...	...	... clxx.
Embelia robusta, Anal. Pl. XIX. fig. 2.			
Emblica officinalis	...	...	... cclviii.
Embryopteris glutinosa	...	...	.. lxix.
Epicarpurus. See Streblus and Taxotrophis.			
Epithinia. See Scyphiphora.			
Erinocarpus Nimmonii	...	...	... cx.
Eriodendron anfractuosum, Anal. Pl. IV. fig. 2.			
Eriolæna Hookeriana, Anal. Pl. V. fig. 2.			
Eriolœna quinquelocularis, Anal. Pl. V. fig. 2.			
Erythrina Indica	...	...	... clxxv.
„ stricta	...	...	... clxxv.
Erythrospermum phytolaccoides, Anal. Pl. II. fig. 6.			
Erythroxylon Indicum	...	...	... lxxxi.
Eugenia alternifolia	...	...	... cxcviii.
„ cylindrica	...	...	... cci.
„ floccosa	...	...	... cc.
„ hemisphærica	...	...	... cciii.
„ jambolana	...	...	... cxcvii.
„ Malabarica	...	...	... cxcix.
„ Zeylanica	...	...	... ccii.
Euonymus crenulatus	...	...	... cxliv.

Tab.

Euphorbia antiquorum, Anal. Pl. XXII. fig. 4.
Euphoria Longana ... ... clvi.
Eupyrena glabra, Anal. Pl. XVI. fig. 4.
Eurya japonica ... ... xcii.
Eurya Wightiana ... ... xcii.
Evodia triphylla, Anal. Pl. VI. fig. 2.
Excœcaria Cochinchinensis, Anal. Pl. XXII. fig. 5.
,, insignis, Anal. Pl. XXII. fig. 5.

F.

Fagara triphylla, Anal. Pl. VI. fig. 2.
Fagrœa Coromandelina ... ... ccxliv.
Falconeria. See Excœcaria.
Feronia Elephantum ... ... cxxi.
Ficus religiosa ... ... cccxiv.
,, Tsiala ... ... cccxiv.
Filicium decipiens ... ... cxxix.
Flacourtia inermis, Anal. Pl. II. fig. 4.
,, sapida, Anal. Pl. II. fig. 4.
,, sepiaria, Anal. Pl. XXIV. fig. 4 ♀ only.
Flueggia. See Securinega.

G.

Gærtnera Kœnigii, Anal. Pl. XXI. fig. 3.
Garcinia Cambogia ... ... lxxxv.
,, Morella ... ... lxxxvi.
Garcinia papilla ... ... lxxxv.
Garcinia pictoria ... ... lxxxvii.
,, Travancorica ... ... clxxiii.
Gardenia lucida, Anal. Pl. XV. fig. 6.
Gardenia turgida, Anal. Pl. XV. fig. 6.
Garuga pinnata ... ... cviii.
Gelonium lanceolatum, Anal. Pl. XXII. fig 6.
Gironniera reticulata ... ... cccxiii.
,, subœqualis ... ... cccxiii.
Givotia rottleriformis ... ... cclxxxv.
Glenniea Zeylanica ... ... cliii.
Glochidion Neilgherriense ... ... cclxxvii.
Gluta Travancorica ... ... lx.
Glycosmis pentaphylla, Anal. Pl. VI. fig. 6.
Glyptopetalum Zeylanicum, Anal. Pl. IX. fig. 5.
Glycicarpus. See Nothopegia.
Gmelina arborea ... ... ccliii.
Gnidia eriocephalus, Anal. Pl. XXV. fig. 2.
Gomphandra coriacea, Anal. Pl. XI. fig. 4.
Gomphia angustifolia, Anal. Pl. VIII. fig. 4.
Goniothalamus Wightii, Anal. Pl. I. fig. 3.
Gordonia obtusa ... ... lxxxiii.
Gordonia parvifolia. ... ... lxxxiii.
Goughia. See Daphniphyllum.
Grewia tiliœfolia ... ... cviii.
Griffithia. See Randia.
Grislea tomentosa, Anal. Pl. XIV. fig. 4.
Grumilea. See Psychotria.
Gualtheria fragrantissima, Anal. Pl. XIX. fig. 1.
Gualtheria Leschenaultii, Anal. Pl. XIX. fig. 1.

Tab.

Guatteria. See Polyalthia.
Guazuma tomentosa ... ... cvii.
Guettarda speciosa, Anal. Pl. XVII. fig. 2.
Gyrinops Walla ... ... ccciii.
Gyrocarpus Jacquini ... ... cxcvi.

H.

Haasia Wightii ... ... ccxcviii.
Hamiltonia suaveolens, Anal. Pl. XVII. fig. 3.
Hardwickia binata ... ... xxvi.
„ pinnata ... ... cclv.
Harpullia imbricata ... ... clviii.
Hebradendron Cambogioides ... ... lxxxvi.
Hedera acuminata ... ... ccxiii.
Hedera racemosa ... ... ccxiv.
Helicia robusta ... ... ccci.
Helicteres Isora, Anal. Pl. V. fig. 1.
Helminthospermum. See Gironniera.
Hemicyclia elata ... ... cclxxix.
Hemigyrosa canescens ... ... cli.
„ deficiens ... ... ccxxxi.
Heptapleurum racemosum ... ... ccxiv.
Heritiera littoralis, Anal. Pl. XI. fig. 6.
„ Papilio .. .. ccxviii.
Hernandia peltata ... ... ccc.
Heynea affinis ... ... cxxxiv.
Heynea trijuga ... ... cxxxiv.
Hibiscus tiliaceus, Anal. Pl. IV. fig. 1.
Hippocratea Arnottiana, Anal. Pl. X. fig. 3.
Hœmatospermum. See Homonoya.
Holarrhena antidysenterica, Anal. Pl. XX. fig. 6.
Holigarna longifolia ... ... clxvii.
Holoptelœa. See Ulmus.
Homalium Ceylanicum ... ... ccx.
„ Travancoricum ... ... ccxi.
Homonoya riparia, Anal. Pl. XXIV. fig. 1.
Hopea parviflora ... ... vii.
„ Wightiana ... ... xcvi.
Horsfieldia. See Myristica.
Hortonia floribunda, Anal. Pl. XXV. fig. 3.
Humboldtia unijuga ... ... clxxxiii.
Hunteria Zeylanica ... ... cclxv.
Hydnocarpus alpina ... ... lxxvii.
Hymenodyction obovatum ... ... ccxix.
„ utile ... ... ccxix.
Hyptianthera macrocarpa ... ... cccxxviii.

I.

Ilex denticulata ... ... cxlii.
„ Malabarica ... ... cxliii.
„ Wightiana ... ... cxlii.
Indigofera pulchella, Anal. Pl. XII. fig. 1.
Inga xylocarpa ... ... clxxxvi.
Isonandra acuminata ... ... xliii.
Ixora parviflora ... ... ccxxii.

J.

Tab.

Jambosa cylindrica ... ... cci.
Jonesia Asoca ... ... lvii.
Julostyles angustifolia, Anal. Pl. III. fig. 4.

K.

Kandelia Rheedii, Anal. Pl. XIII. fig. 6.
Kayea stylosa ... ... cii.
Kleinhovia hospita, Anal. Pl. IV. fig. 4.
Knema. See Myristica.
Kokoona Zeylanica ... ... cxlvi.
Kydia axillaris, Anal. Pl. III. fig. 6.
Kydia calycina, Anal. Pl. III. fig. 5.
Kydia fraterna, Anal. Pl. III. fig. 5.
Kurrima Ceylanica ... ... cxlvii.
,, Indica ... ... cxx.

L.

Lagerstræmia lanceolata ... ... xxxii.
,, microcarpa ... ... xxx.
,, parviflora ... ... xxxi.
,, Reginæ ... ... xxix.
Lansium Anamallayanum ... ... cxxxi.
Laportea crenulata ... ... cccvi.
Lasianthera apicaulis ... ... cxxxix.
Lasianthus venulosus, Anal. Pl. XVII. fig. 5.
Lasiosiphon eriocephalus, Anal. Pl. XXV. fig. 2.
Lawsonia alba, Anal. Pl. XIV. fig. 6.
Lebidieropsis orbicularis, Anal. Pl. XXIV. fig. 5.
Lepidadenia. See Tetranthera.
Leptonychia moaccuroides ... ... cxiv.
Lepurandra. See Antiaris
Ligustrum Perottetti, Anal. Pl. XIX. fig. 5.
Limonia alata, Anal. Pl. VII. fig. 4.
Litsæa Zeylanica ... ... ccxciv.
Lonicera ligustrina, Anal. Pl. XV. fig. 5.
Lophopetalum Wightianum ... ... cxlv.
Lumnitzera racemosa, Anal. Pl. XXI. fig. 2.

M.

Maba buxifolia, Anal. Pl. XIX. fig. 4.
,, oblongifolia, Anal. Pl. XXI. fig. 1.
Macaranga Indica ... ... cclxxxvii.
,, tomentosa ... ... cclxxxvii.
Machilus macrantha ... ... cclxiv.
Maclellandia Griffithiana, Anal. Pl. XIV. fig. 5.
Maclura. See Cudranus.
Macreightia oblongifolia, Anal. Pl. XXI. fig. 1.
Mœsa Indica, Anal. Pl. XVIII. fig. 4.
Mahonia. See Berberis.
Mallea Rothii, Anal. Pl. VIII. fig. 5.
Mallotus Philippinensis ... ... cclxxxix.
Mammea. . See Ochrocarpus.
Mangifera Indica ... ... clxii.
Mappia fœtida ... ... cxli.

	Tab.
Mastixia arborea	ccxvi.
Melanthesa. See Breynia.	
Melia Azadirachta	xiii.
,, Azedarach	xiv.
,, composita	xii.
Melicope Indica, Anal. Pl. VI. fig. 1.	
Meliosma Arnottiana	clx.
,, pungens	clx.
Melochia velutina, Anal. Pl. V. fig. 3.	
Memecylon capitellatum	ccvi.
,, umbellatum	ccvi.
Mephitidea. See Lasianthus.	
Mesua Coromandelina	lxiv.
Michelia Nilagirica	lxii.
Microclœna quinqueloculuris, Anal. Pl. V. fig 2.	
Microelus. See Bischoffia.	
Micromelum pubescens, Anal. Pl. VII. fig. 1.	
Microtropis ramiflora, Anal. Pl. IX. fig. 6.	
Miliusa velutina	xxxvii.
Millingtonia Arnottiana	cxl.
Millingtonia hortensis	ccxlix.
Millingtonia pungens	clx.
Milnea. See Aglaia.	
Mimusops eleng	xl.
Mischodon Zeylanicus	ccxc.
Mitrephora grandiflora	lxxv.
Moacurra gelonioides, Anal. Pl. IX. fig. 1.	
Monocera ferruginea	cxii.
Monocera tuberculata	cxiii.
Monoporandra cordifolia	ci.
Monosis. See Vernonia.	
Morinda citrifolia	ccxx.
Moringa pterygosperma	lxxx.
Morocarpus longifolius, Anal. Pl. XXVI. fig. 5.	
Mundulea suberosa, Anal. Pl. XII. fig. 2.	
Murraya exotica, Anal. Pl. VII. fig. 2.	
Mussœnda frondosa, Anal. Pl. XVI. fig. 3.	
Myristica corticosa	cclxi.
,, Farquhariana	cclxx.
,, laurifolia	cclxvii.
,, Malabarica	cclxix.
,, magnifica	cclxviii.
Myrsine capitellata	ccxxxiv.

N.

Nargedia macrocarpa	cccxxviii.
Nauclea Cadamba. See Anthocephalus.	
Nauclea coadunata	cccxviii.
Nauclea cordifolia. See Adina.	
Nauclea elliptica, Anal. Pl. XXIX. fig. 3.	
Nauclea parvifolia. See Stephegyne.	
Nelitris jambosella, Anal. Pl. XVI. fig. 4.	
Nemedra. See Aglaia.	
Nephelium longana	clvi.
Nephelium stipulaceum	clv.
Neerija. See Elæodendron.	
Nimmonia. See Amoora.	
Nothopegia Colebrookiana	clxiv.
Nyctanthes arbor-tristis	ccxl.

Tab.

O.

Ochna squarosa, Anal. Pl. VIII. fig. 3.
Ochrocarpus longifolius ... ... lxxxix.
Octotropis Travancorica ... ... cccxxvii.
Odina Wodier ... ... cxxiii.
Olax Wightiana, Anal. Pl. IX. fig. 2.
Olea glandulifera ... ... ccxxxviii.
Opilia amentacea, Anal. Pl. IX. fig. 3.
Ophioxylon densiflorum, Anal. Pl. XX. fig. 2.
Ophioxylon Neilgherriense, Anal. Pl. XX. fig. 2.
Oreocnide sylvatica, Anal. Pl. XXVI. fig. 4.
Ormosia Travancorica ... ... xlv.
Ornitrophe. See Schmidelia.
Orophea erythrocarpa, Anal. Pl. I. fig. 8.
Osmelia Gardneri ... ... ccix.
Ostodes Zeylanica ... ... cclxxiv.
Osyris arborea, Anal. Pl. XXVI. fig. 6-A.
Otonychium. See Harpullia.
Ougeinia dalbergioides ... ... xxxvi.
Oxytenanthera Thwaitesii ... ... cccxxii.

P.

Pajanelia Rheedii, Anal. Pl. XXI. fig. 5.
Palenga. See Putranjiva
Parkinsonia aculeata, Anal. Pl. XIII. fig. 2.
Parinarium Indicum ... ... cxci.
Pavetta involucrata, Anal. Pl. XXIX. fig 6.
Pemphis acidula, Anal. Pl. XIV. fig. 5.
Pentapanax Leschenaultii, Anal. Pl. XV. fig. 3.
Pericopsis Mooniana ... ... clxxxvii.
Phœanthus Malabaricus, Anal. Pl. I. fig. 7.
Phœbe Wightii ... ... cxcii.
Phaleria cauliflora, Anal. Pl. XXV. fig. 5.
Phoberos. See Scolopia.
Photinia Notoniana ... ... cxcii.
Phyllanthus emblica. .. .. cclviii.
„ Indicus, Anal. Pl. XXIV. fig. 6.
Pierardia. See Baccaurea.
Pithecolobium Anamallayanum ... ... clxxxix.
„ dulce ... . clxxxviii.
Pisonia aculeata, Anal. Pl. XXII. fig. 3.
Pittosporum tetraspermum, Anal. Pl. II. fig. 8.
Pityranthe verrucosa ... . cix.
Platea. See Gomphandra.
Plectronia didyma ... ... ccxxi.
Plecospermum spinosum, Anal. Pl. XXVI. fig. 2.
Pleurostylia Wightii, Anal. Pl. X. fig. 1.
Podadenia Thwaitesii ... ... cclxxxii.
Podocarpus latifolia .. .. .. cclvii.
Pœciloneuron Indicum ... ... iii.
Pœciloneuron pauciflorum ... ... xciii.
Poinciana elata .. .. clxxviii.
Polyalthia cerasoides ... ... i.
„ coffeoides ... ... lxxiii.
„ fragrans ... ... lxxiv.
„ longifolia ... ... xxxviii.
Polyodontia. See Pygeum.
Polyscias acuminata ... ... ccxiii.

	Tab.
Pometia eximea	clvii.
Pongamia glabra	clxxvii.
Popowia Beddomeana, Anal. Pl. I. fig. 2.	
Popowia ramosissima, Anal. Pl. I. fig. 2.	
Premna tomentosa	ccli.
Prismatomeris albidiflora, Anal. Pl. XXIX. fig 4.	
Prosopis spicigera	lvi.
Prosorus Indica, Anal Pl. XXIV. fig. 6.	
Protium caudatum	cxxv.
Protium Gileadense	cxxvi.
Psychotria elongata, Anal Pl. XVII. fig. 6.	
Pteridophyllum. See Filicium.	
Pterocarpus Indicus	xxiii.
„ marsupium	xxi.
„ santalinus	xxii.
Pterospermum rubiginosum	cvi.
Putranjiva Roxburghii	cclxxv.
„ Zeylanica	cclxxv.
Pygeum acuminatum	lix.
Pygeum Ceylanicum	lix.
Pyrrhosia. See Myristica.	
Pyrularia Wallichiana	ccciv.

R.

Randia dumetorum, Anal. Pl. XVI. fig. 1.	
„ uliginosa, Anal. Pl. XVI. fig. 1.	
Ramnus hirsutus, Anal Pl. X. fig. 6.	
Rhizophora Candelaria, Anal. Pl. XIII. fig. 4.	
Rhizophora mucronata, Anal. Pl. XIII. fig. 4.	
Rhododendron arboreum	ccxxviii.
Rhodomyrtus tomentosus, Anal. Pl. XIV. fig. 3.	
Rhus decipiens	cxix.
Rhus Mysorensis, Anal. Pl. XI. fig. 3.	
Robinia suberosa, Anal. Pl. XII. fig. 2.	
Rottlera Thwaitesii. See Podadenia.	
Rottlera tinctoria. See Mallotus.	
Rottlera urandra. See Cleidion.	
Roumea hebecarpa, Anal. Pl. II. fig. 5.	
Rourea santaloides, Anal. Pl. XI. fig. 4.	

S.

Saccopetalum tomentosum	xxxix.
Sageræa Dalzellii, Anal Pl. I. fig. 4.	
Salacia oblonga, Anal. Pl. X. fig. 4.	
Salix tetrasperma	cccii.
Salmalia Malabarica	lxxxii.
Salvadora Wightiana	ccxlvii.
Samadera Indica, Anal. Pl. VIII. fig. 1.	
Sandoricum Indicum	cccxix.
Santalum album	cclvi.
Sapindus emarginatus	cliv.
Sapindus unijugus	cliii.
Sapota elengioides	ccxxxv.
Saprosma Wightii, Anal. Pl. XVII. fig. 4.	
Saraca Indica	lvii.
Sarcocephalus cordatus	cccxviii.
Sarcococca saligna, Anal. Pl. XXIV. fig. 5.	

Tab.

Sarcococca trinervia, Anal. Pl. XXIV. fig. 5.
Sarcoclinium longifolium, Anal. Pl. XXIV. fig. 1.
Sarosanthera lasiopetala, Anal. Pl. III. fig. 3.
Sepa Lindleyana. See Aporosa.
Schleichera trijuga ... ... cxix.
Schmidelia hispida ... ... clii.
Schrebera swietenioides ... ... ccxlviii.
Sclerostylis. See Atalantia
Scolopia crenata ... ... lxxviii.
Scutia Indica, Anal. Pl. XI. fig. 1.
Scyphiphora Malayana, Anal. Pl. XXIX. fig. 5.
Scyphostachys coffeoides, Anal. Pl. XVI. fig. 6.
Scytale longana ... ... clvi.
Securinega leucopyrus, Anal. Pl. XXIV. fig 4 ♂ only.
Semecarpus Anacardium ... ... clxvi.
„ Travancorica ... ... ccxxxii.
Serissa. See Saprosma.
Sesbania Ægyptiaca, Anal. Pl. XII. fig. 3.
Sethia Indica ... ... lxxx.
Shorea laccifera ... ... vi.
„ robusta ... ... iv.
„ Tambagaia ... ... v.
Solenocarpus Indica ... ... ccxxxiii.
Sonneratia acida, Anal. Pl. XV. fig. 1.
Sophora interrupta, Anal. Pl. XII. fig. 6.
Soymida febrifuga ... ... viii.
Spathiostemon. See Homonoya.
Spathodea falcata ... ... lxxi.
Sphærocarya leprosa ... ... cxxxvii.
Sphragidia. See Cyclostemon.
Spondias mangifera ... ... clxix.
Sponia Wightii ... ... cccxi.
Stalagmites. See Xanthochymus.
Stemonoporus acuminatus ... ... c.
„ Gardneri ... ... xcix.
Stemonurus fœtidus ... ... cxli.
Stephegyne parvifolia ... ... xxxiv. and Anal. Pl. XXIX. fig 1.
Sterculia guttata ... ... cv.
Sterculia Haynii ... ... ccxxx.
Stereospermum chelonoides ... ... lxxii.
Streblus aspera, Anal. Pl. XXVI. fig. 1.
Streptostigma. See Harpullia.
Strombosia Ceylanica ... ... cxxxvii.
Strongylocalyx hemisphærica ... ... cciii.
Strychnos nux-vomica ... ... ccxliii.
Stylocoryne Webera, Anal. Pl. XVI. fig. 2.
Stylodiscus. See Bischoffia.
Symplocos Gardneriana ... ... ccxxxvii.
„ oligandra, Anal. Pl. XX. fig. 1.
Syzygium alternifolium ... ... cxcviii.
Syzygium jambolanum ... ... cxcvii.

T.

Tabernamontana verticellata, Anal. Pl. XX. fig. 3.
Tamarindus Indica ... ... clxxxiv.
Tamarix ericoides, Anal. Pl. III. fig. 1.
Taxotrophis Roxburghii, Anal. Pl. XXVI. fig. 3.
„ Zeylanica, Anal. Pl. XXVI. fig. 3.

			Tab.
Tectona grandis	...	...	... ccl.
Teinostachyum Wightii	...	...	... cccxxiii.
Tephrosia suberosa, Anal. Pl. XII. fig. 2.			
Terminalia Arjuna	...	..	... xxviii.
„ belerica	...	...	... xix.
„ Catappa	...	...	... xx.
„ chebula	...	...	... xxvii.
Terminalia coriacea	...	...	... xvii.
Terminalia glabra	...	...	... xvii.
Terminalia paniculata	...	...	... xviii.
„ tomentosa	...	...	... xvii.
Ternstrœmia gymnanthera	...	...	... xci.
Tetracrypta. See Anisophyllea.			
Tetraglossa. See Cleidion.			
Tetrameles Grahamiana	...	...	... ccxii.
Tetrameles nudiflora	...	...	... ccxii.
Tetranthera Wightiana	...	...	... ccxciii.
Thespesia populnea	...	...	... lxiii.
Timonius Jambosella, Anal. Pl. XVI. fig. 4.			
Toddalia aculeata, Anal. Pl. VI. fig. 5.			
Trewia nudiflora	...	...	... cclxxxi.
Trichadenia Zeylanica, Anal. Pl. II. fig. 7.			
Trichaurus. See Tamarix.			
Trigonostemon Lawianus	...	...	... cclxxiii.
Trochisandra Indica	...	...	... cxx.
Trophis aspera. See Streblus.			
Trophis spinosa. See Cudranus and Taxotrophis.			
Turpinia Nepalensis	...	...	... clix.

U.

Unona Lawii, Anal. Pl. I. fig. 1.			
Ulmus integrifolia	..	...	... cccx.
Urandra. See Lasianthera.			
Urophyllum Zeylanicum, Anal. Pl. XVI. fig. 5.			
Urostigma. See Ficus.			
Urtica crenulata. See Laportea.			

V.

Vaccinium Leschenaultii	...	...	... ccxxvii.
Vateria Indica	...	...	... lxxxiv.
„ Malabarica	...	...	... lxxxiv.
Vatica laccifera	...	...	... vi.
Vatica Roxburghiana	...	...	... xcv.
Vatica Tambagaia	...	...	... v.
Vernonia volkameriœfolia	...	...	... ccxxv.
„ Wightiana	...	...	... ccxxvi.
Viburnum acuminatum	...	...	... ccxvii.
Viburnum punctatum	...	...	... ccxvii.
Villebrunea sylvatica. See Oreocnide.			
Virgilia aurea, Anal. Pl. XII. fig. 5.			
Visenia umbellata, Anal. Pl. V. fig. 3.			
Vitex altissima	...	...	... ccliii.

W.

Walsura piscidia, Anal. Pl. VIII. fig. 6.			
Webera Asiatica, Anal. Pl. XVI. fig. 2.			
Weihea Zeylanica	...	...	... cxciv.
Wendlaudia Notoniana	...	...	... ccxxiv.

				Tab.
Wikstrœmia virgata, Anal. Pl. XXV. fig. 4.				
Willughbeia Ceylanica, Anal. Pl. XX. fig. 4.				
Wormia bracteata	...	...	...	cxv.
Woodfordia tomentosa, Anal. Pl. XIV. fig. 4.				
Wrightia tinctoria	...	...	...	ccxli.

X.

Xanthochymus pictorius	...	...	...	lxxxviii.
Xanthophyllum angustifolium, Anal. Pl III. fig. 2.				
,, Arnottianum, Anal. Pl. III. fig. 2.				
,, virens, Anal. Pl. III. fig. 2.				
Xanthoxylum ovalifolium, Anal. Pl. VI. fig. 3.				
,, Rhetsa, Anal. Pl. VI. fig. 3.				
Xanthoxylum triphyllum, Anal. Pl. VI. fig. 2.				
Xylia dolabriformis	...	...	...	clxxxvi.
Xylocarpus granatum	...	...	...	cxxxvi.
Xylopia Championii, Anal. Pl. I. fig. 5.				
,, parviflora	...	...	...	clxxii.

Z.

Zizyphus jujuba	...	...	...	cxlix

JU 17
COLOMBO

Notice.

The letter press of the Flora Sylvatica as now issued is only initiatory, and it is hoped that Forest Officers throughout India will furnish the author with all information procurable about the different trees of their districts.

The following are the main heads under which the history of each tree might be treated.

1. Geographical distribution, influence of soil, aspect, elevation, associates (other trees and bamboos, &c.) Its worth as an avenue tree, or as a tree for ornament or shade.

2. Mode of growth, size, age.
3. Rate of growth.
4. Bark.
5. Time of flowering, ripening and shedding of seed.
6. Germination.
7. Reproduction from seed.
8. ,, ,, shoots.
9. Diseases, insects and other enemies, death.
10. The wood and full particulars of its character and uses.
11. All the uses of the tree and its different parts.
12. Vernacular names in different provinces.

The plates and descriptions will make the identification of each tree an easy matter and will supply a want long felt by many in the Forest Department. The letter press only will be reprinted when the plates are finished and further information has been elicited.

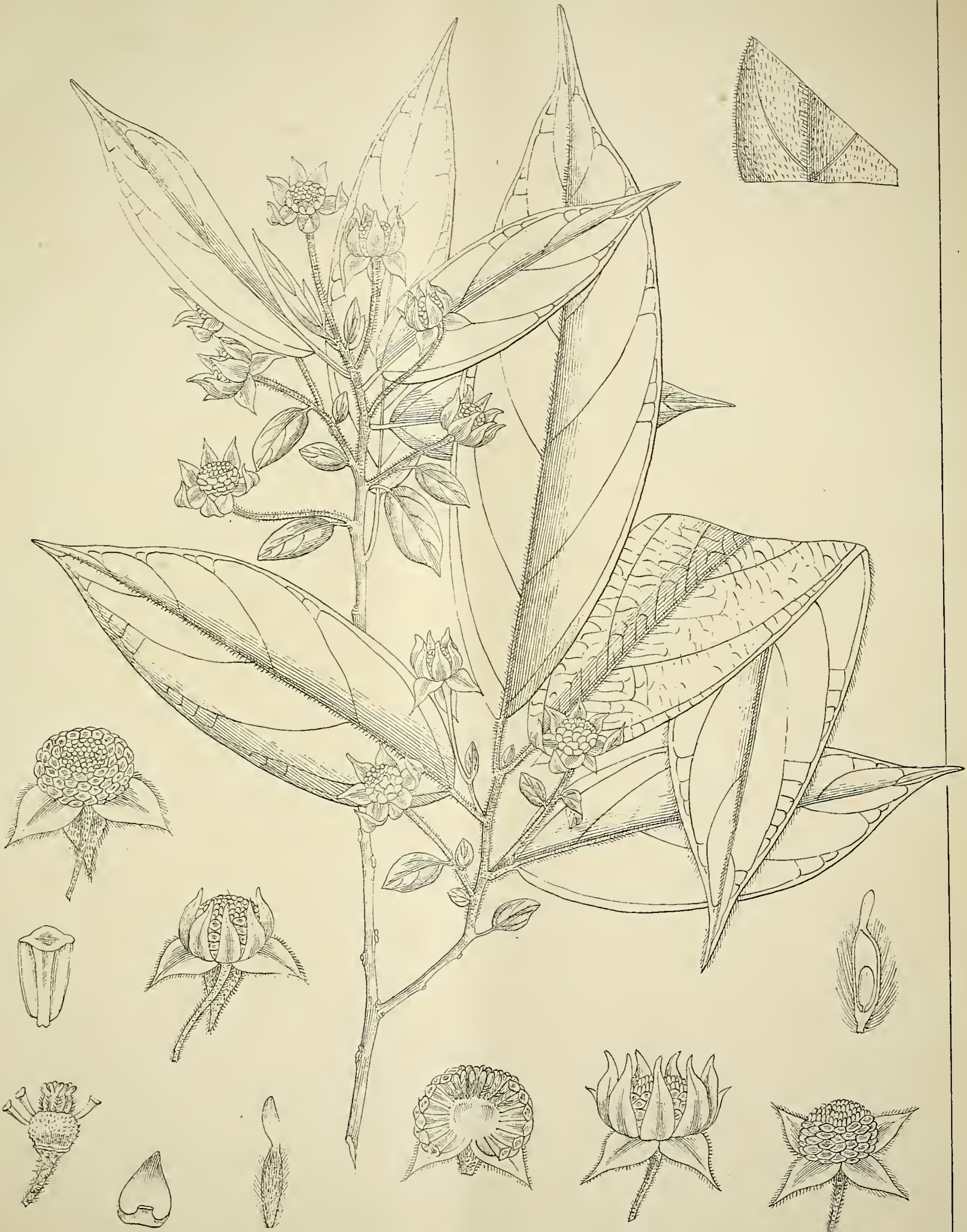
Dried flowering and fruiting specimens of rare or little known forest trees will be thankfully received by the author.

POLYALTHIA CERASOIDES. (Nat. ord. Anonaceæ.)

POLYALTHIA. (Bl.) *Gen. Pl. page* 25.—GEN. CHAR. Sepals 3, free or connate below, valvate or slightly imbricate in æstivation; petals 6 equal or sub-equal, valvate in 2 series in æstivation, ovate or linear; stamens numerous linear or cuneate, connective dilated, and thickened beyond the cells, carpels numerous. Stigma oblong or capitate, ovules one or two usually erect; fruit-carpels stipitate or oblong 1 seeded—trees or shrubs.

POLYALTHIA CERASOIDES. (Dun.) Leaves oblong or lanceolate acute, pubescent beneath: flower bearing shoots almost abortive lateral leafless; peduncles solitary, terminal, with one or two bracteas at their base; calycine lobes nearly as long as the corol: petals equal oval oblong thick; carpels globose dark red, size of a cherry, on stalks nearly twice their length.—*D. C. prod.* i. *p.* 93. Guatteria cerasoïdes.—*W. A. prod. p.* 10. Uvaria cerasoides.—*Roxb. Fl. Ind.* ii. *p.* 666.

A straight handsome tree of moderate size, timber whitish and close-grained and of considerable value, much used in the Central Provinces and in the Bombay Presidency—it is used in carpentry and for naval purposes, such as boat masts and small spars, but apparently little known in Madras. It is common in dry forests near the foot of all the mountains on the western side of the Madras Presidency, in the Salem forests, the Nullay Mullays, Mysore, Orissa and the Godavery forests—it flowers in the hot months, and the flowers are fragrant and of a greenish color. It has never yet been cultivated or planted. In the Godavery forests it is known by the names of Dudugu and Chilka Dudugu, (Teligoo) and in the Bombay Presidency it is called Hoom, (Mahr.)



Polyalthia cerasoides. (Dun.)

[illegible], DEL: DUMPHY, LITH:

CALOPHYLLUM ELATUM. (Nat. ord. Guttiferœ.)

CALOPHYLLUM. (Linn.) *Gen. Pl. p.* 175.—GEN. CHAR. Flowers often polygamous, perianth composed of 4-12, sepals and petals imbricated in 2-3 series, stamens numerous free or scarcely connate at the base; filaments short filiform, anthers erect ovate or oblong 2 celled dehiscing longitudinally; ovary 1 celled, style longish stigma peltate, ovule 1 erect, drupe indehiscent. Trees with leaves furnished with numerous transverse parallel nerves.

CALOPHYLLUM ELATUM. (Bedd.) Young shoots, panicles and outer sepals ferruginous, leaves elliptic acuminate attenuated at the base, very shining, petioles about 1 inch long, panicles terminal and from the upper axils large many flowered; sepals 4, two outer ones sub-rotund small, two inner petaloid; petals 4; fruit *ovoid* pointed about the size of a thrush's egg.

A very large straight tree with numerous longitudinal cracks down the bark, grows abundantly in most of the moist ghat forests or sholas, in our Western coast from Canara down to Cape Comorin, and in similar forests on the lower Pulneys, Anamalloys, Coorg, Mysore and the Sirumallays—it is never found in dry deciduous forests—it yields the poonspar of commerce and is known by the nome of Poon or Poone in Malabar, Siri Poone in South Canara, and Pongoo in the Anamallays—thousands of these trees have lately been destroyed by the axe of Coffee planters in Malabar, Coorg and Travancore; large quantities still remain but chiefly in very inaccessible places. In the ghat forests of South Canara they are felled by the Forest Department and floated down rivers to the coast depôts, but the demand for the article does not seem great, though many years ago a single fine spar has fetched as much as 1,000 *Rs. The wood is scarcely known, except as a spar, though it is occasionally used for building and bridge-work by planters—it is reddish, coarse grained but ornamental. The tree has never been planted and would not succeed except in the moist forests on the mountains at an elevation of* 1,000 *to* 4,000 *feet; it flowers in January and February, and the seed falls early in the rains and germinates freely in the dense shade of the shola forests.*

This tree was for some years supposed to be the Calophyllum angustifolium of Roxburgh, which is from the Prince of Wales' Island.

C. tomentosum Wight & Fl. Brit. Ind. 1, p. [illegible] Native of Ceylon. [illegible] The common mountain [illegible] —

G. .. NO C., DEL.

DUMPHY, LITH.

Calophyllum elatum. (Beddome.)

PŒCILONEURON INDICUM. (Nat. ord. Ternstræmiaceæ.)

PŒCILONEURON, (Bedd.) *Gen. Pl. p.* 981.—GEN. CHAR. Sepals 5 equal imbricate, petals 5 contorted, stamens numerous (about 20) on a tube surrounding the ovary which is either inconspicuous and entire or more or less prominent and 5 cleft, so that the stamens are sub-pentadelphous: anthers linear erect affixed by their base, ovary 2 celled, styles 2 subulate, ovules 2 in each cell, erect. Fruit? trees with opposite coriaceous shining leaves with close parallel venation and minutely reticulated.

PŒCILONEURON INDICUM. (Bedd.) Leaves ovate-oblong with a long acumination glabrous, panicles terminal, many flowered, flowers yellowish white, calyx peduncles and pedicles slightly puberulous. *Bedd. in Journl. Linn. oc. VIII.* 267 *to* 17.

A good sized tree, common in the ghat forests of South Canara and Malabar up to an elevation of 4,000 *feet—it is never found except in the shola forests; in South Canara it is well known to the natives under the name of Kirbally (Can.), but though I have seen the tree on the Sisparah ghat and elsewhere in Malabar, it seems unknown to the natives. The timber appears to be of considerable value, but is almost unknown at present—it is very hard and is used for Rice-pounders in South Canara—it flowers in March and April.*

Pœciloneuron Indicum (Bedd:)

GOVINDOO, DEL:

J. DUMPHY LITH:

SHOREA ROBUSTA. (Nat. ord. Dipterocarpeæ.)

SHOREA. (Roxb.) *Gen. Pl. p.* 193.—GEN. CHAR. Calyx tube very short adnate to the torus, not increasing in fruit, divisions ovate or lanceolate imbricate wing-like and all or 3 only enlarged in fruit, connivent over the fruit at the base. Stamens numerous or 15, anthers ovate or oblong, rarely linear, connectivum subulato-cuspidate, cells obtuse or rarely cuspidate, valves equal or the exterior valve a little larger—ovary 3 celled, cell 2 ovuled, style subulate, entire or 3 toothed at the apex, fruit coriaceous indehiscent; 1 seeded—seed ovoid, cotyledons thick fleshy unequal. Trees bearing resin, glabrous or tomentose stipules persistent or deciduous, leaves entire or repand panicles axillary or terminal.

SHOREA ROBUSTA. (Roxb.) Leaves short petioled cordato-oblong, 6-10 inches long by 4-6 inches broad, stipules falcate, panicles terminal and axillary, stamens numerous, stigma 3 toothed. *Roxb. Fl. Ind. p.* ii. 615.

An immense timber tree, abundant in the Godavery forests, the Gumsoor and Russelcondah forests, and in Bengal (the Terai, Parasnath and Assam) and in Burmah ? but not known in the South of the Madras Presidency. In some of the Sal tracts in Gumsoor it grows almost to the exclusion of every other tree and the natural forests often have the appearance of plantations—it flowers in March and April, and the seeds often commence germinating before they leave the parent tree early in the rains and eventually come up very thickly in the forests. The tree grows very straight and tall and sometimes reaches 10 *or* 12 *feet in girth. The seed has a vitality of such short duration that all attempts to grow it in the South have failed, though it was attempted several successive seasons—it is also rapidly bored by insects. The timber is one of the most valuable in India for Engineering purposes and is largely used in Gun Carriage Manufactories and for many other purposes, such as house-building and ship-building, but warps in plank—it lasts an immense time under ground or under water and is almost unequalled for sleepers, and seems quite proof against white ants ; it is close grained, heavy and hard, of a light brown color—the bark is employed by tanners and yields an abundancy of resin or dammer which is used as a substitute for pitch, and burnt by the natives as incense, and an aromatic oil is procured from the resin by dry distillation. It is called Sal and Salwa in Gumsoor and Googul in the Godavery forests. I am not sure that the Birmese tree called Eingg-yin is the same species.*

GOVINDOO, DEL: DUMPHY, LITH:

Shorea robusta. (Roxb.)

SHOREA TUMBAGAIA. (Nat. ord. Dipterocarpeæ.)

For Gen. Char. see under "Shorea Robusta."

Shorea Tumbagaia. (Roxb.) Leaves long petioled, ovato cordate, $2\frac{1}{2}$ to 4 inches long by 2-3 inches broad, petioles 1 to 2 inches long, panicles terminal, stamens about 100 with bearded anthers. *Roxb. Fl. Ind.* ii. 617—*Wight's Ic. t.* 27.

I have only met with this tree in the hill forests of Cuddapah and North Arcot; it is a large tree yielding a valuable timber, and is well known in those districts under the name of Thambâ: it is largely used in house building and for rafters, door frames and posts, and is exported to Madras—a dammer exudes from the trunk. The Kong of Tinnevelly is not this tree, but belongs to the allied genus Hopea.

GOVINDOO, DEL:

J. DUMPHY. LITH.

Shorea Tumbagaia (Roxb.)

SHOREA LACCIFERA. (Nat. ord. Dipterocarpeæ.)

For Gen. Char. see under "Shorea Robusta."

SHOREA LACCIFERA. (W. A.) Glabrous, leaves coriaceous oblong obtuse or emarginate and often emarginate at the base, $3\frac{1}{2}$-5 inches long by 2 to $2\frac{1}{2}$ inches broad: panicles numerous from the axils of the fallen leaves, branches and pedicels glabrous, calyx in flower glabrous; stamens 15, anther-bristle very long. *W. A. prod. p.* 84. *under Vatica—Wight's Ic. t.* 164.

A large tree, very abundant in the hill forests of Cuddapah and North Arcot, and also found in the Mudumullay forests, Anamallays, Wynaad, Mysore, &c. In the Cuddapah and North Arcot districts it is well known under the name of Jàllàri (Tel.), but the tree does not appear to be generally known in the other localities; its timber is very useful for house building, pannels of doors and various other purposes, and has a ready sale in the Cuddapah district, and is largely imported into Madras. A species of Lac is procured from the tree.

Gorrudoo del. Dumphy Lith.

Shorea laccifera, n.a.

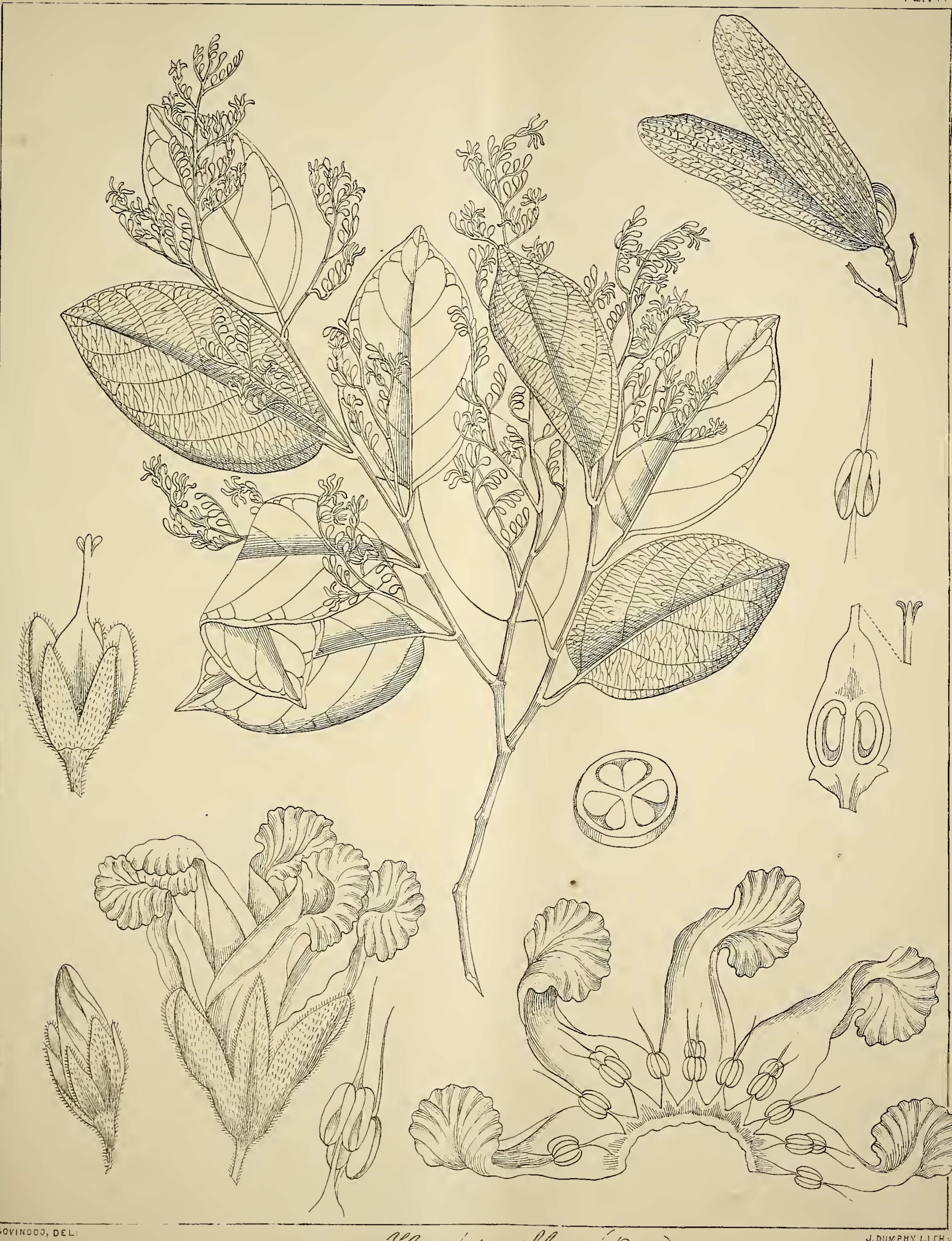
HOPEA PARVIFLORA. (Nat. ord. Dipterocarpeæ.)

HOPEA. (Roxb.) *Gen. Pl. p.* 193.—GEN. CHAR. Calyx tube very short aduate to the torus not increasing in fruit, divisions short obtuse often membranceous on the margin imbricate, 2 enlarging in fruit large and wing-like erect, the rest small, all connivent over the fruit at the base. Stamens 15 rarely 10, anthers ovate, connectivum subulato-cuspidate, cells obtuse equal valved. Ovary 3 celled, cell 2 ovuled, style short terete or subulate. Fruit indehiscent, 1 seeded, seed ovoid, cotyledons thick fleshy unequal. Trees yielding resin, glabrous or tomentose, stipules small deciduous, or inconspicuous, leaves entire coriaceous—*a genus nearly allied to Shorea.*

HOPEA PARVIFLORA. (Bedd.) Petioles panicles and calyx hairy, leaves short petioled glabrous ovate to oblong furnished with glands in the axils of the veins beneath, 2 to 2½ inches long by 1 to 1½ broad, flowers secund subsessile numerous very minute, sweet scented, stamens 15 alternately single and in pairs, stigma 3 cleft.

A large handsome tree, common in both the moist and dry forests in Malabar and South Canara, up to an elevation of 3,500 *feet. The wood is hardly known commercially as yet, but it is much valued by the Natives in South Canara, and I believe it will be of great value for gun carriage purposes, and I have forwarded specimens to Madras and Bombay—it will also answer well for sleepers. In Malabar it is called Irubogam and in South Canara Kiral Boghi on the ghats and Tirpu in the plains; in the latter district it is much valued for temple building purposes.*

PL. VI.



GOVINDOO, DEL: J. DUMPHY, LITH:

Hopea parviflora (Bedd:)

SOYMIDA FEBRIFUGA. (Nat. ord. Meliaceæ.)

SOYMIDA. (A. Juss.) *Gen. Pl. p.* 338.—GEN. CHAR. Sepals 5 short imbricate, petals 5 spreading unquiculate contorted, stamen tube short, cupuliform 10 lobed, lobes 2 toothed, anthers sessile between the teeth, disk ring-like, ovary ovoid 5 celled, style short attenuated, stigma dilated 5 sided, ovules numerous in the cells in 2 series pendulous, capsule woody 5 celled 5 valved, dehiscing at the apex septifragal, the thin woody sarcocarp on each valve becoming detached from the endocarp and both from the persistent axis that is 5 angled by the dissipiments, seeds pendulous from the top of the axis imbricated in each cell, flat expanding on all sides but particularly upwards (with the hilum at the extremity) and downwards into a wing; embryo nearly straight, cotyledons 2 auricled at the apex, radicle conical pointing upwards, concealed between the auricles of the cotyledons, leaves abruptly pinnate, leaflets opposite 3-6 pair, oval-oblong obtuse, panicles large terminal or in the axils of the uppermost leaves.

SOYMIDA FEBRIFUGA. (Juss.) *Roxb. Fl. Ind.* ii. *p.* 398—*prod. p.* 122.

A tree of considerable size, not uncommon in the forests of Palghat, Cuddapah, Gumsoor, Mysore and elsewhere in the Madras Presidency and in the Central Provinces, Bombay and Bengal. It yields a valuable dull red colored wood that is highly prized by the natives for building purposes and is very durable and strong, but though well adapted for all indoor work, it is apt to split on exposure to the sun. The bark is used as a febrifuge—it is known by the names of Sohn or Rohn in Bengal, Soomi in Teligoo and Shem in Tamil, and is the red cedar of Europeans. Mr. Broughton says that the substance to which the bark owes its bitter taste has the properties of a resin and is of a yellowish white color when pure—it is sparingly soluble in water, but is unsoluble if the water contains acids; it is soluble in alcohol, ether and benzol, but these liquids do not completely separate it from foreign substances—it contains no nitrogen.

GOVINDOO, DEL: DUMPHY, LITH:

Soymida febrifuga: (Juss.)

CHICKRASSIA TABULARIS. (Nat. ord. Meliaceæ.)

CHICKRASSIA. (Ad. de Juss.) *Gen. Pl. p.* 339.—GEN. CHAR. Calyx short cupular 4-5 toothed, petals 4-5 erect contorted. Stamen tube cylindrical 10 crenated the crenatures each bearing 1 anther, anthers ovate exserted erect, disk none, ovary oblong shortly stipulate 3 celled attenuated into a style, stigma capitate, ovules numerous in 2 series, capsule ovoid woody 3 celled septicidally 3 valved at the apex, valves 2 lamellate and separating from the 3 winged axis, seeds numerous imbricated in a double series horizontally across each cell, flat expanding downwards (at the opposite extremity of the hilum) into a wing, cotyledons orbicular not auricled, radicle superior cylindrical oblong oblique exserted applied to the edge of the cotyledons at their top—leaves abruptly pinnated, leaflets opposite and alternate acuminate, panicles terminal.

CHICKRASSIA TABULARIS. (Juss.) Leaves alternate, abruptly pinnate 6-18 inches long, leaflets 5-10 pair subopposite or alternate shortly petioled, obliquely ovato-oblong, unequal sided obtusely acuminated quite entire and increasing in size towards the apex of the leaf, hairy in the axils of the nerves beneath, stipules none, panicles terminal erect, flowers numerous rather large of a dirty white or cream color. *W. A. prod.* 123.—Swietenia Chickrassia. *Roxb. Fl. prod.* ii. 398—*Wight. Ill.*

A tree of large size, often 8 *to* 10 *feet in girth with a thick straight trunk* 60 *or* 80 *feet to* 1*st bough and rust colored deeply cracked bark ; found though sparingly in most of the hill forests of the Madras Presidency both in shola and deciduous forests, and in Mysore, Bombay and the Eastern parts of Bengal : it is the true Chittagong of commerce and is called Aglay or Agal in some parts of our Presidency, Madagari Vembu in others, Gànti Màlle in Salem, and in Bengal Chickrasee. The wood is of a light color and prettily veined and close in the grain, and is much used for furniture ; it has a cedar-like smell and is one of the woods known as bastard cedars to Europeans. No attempt at cultivating this tree on any large scale has yet been made, but specimens are met with in Botanical Gardens; in Ceylon it is known under the name of Hoolanghik-gass, and its timber used in the interior of the palace of one of the Kandyan kings is known to have lasted some hundreds of years.*

GOVINDOO, DEL: DUMPHY, LITH:

Chickrassia tabularis. (Juss.)

CEDRELA TOONA. (Nat. ord. Meliaceæ.)

CEDRELA. (Linn.) *Gen. Pl. p.* 339.—GEN. CHAR. Calyx short 5 partite, petals 5 erect keeled inside on the middle, imbricate or contorted or valvate at the base, disk adnate with the stalk glandular 5 ribbed concrete between the ribs with the interposed plaits of the petals, 4-6 lobed at the apex. Stamens 4-6 inserted on the apex of the disk sometimes alternate with as many staminodes, filaments subulate, anthers oblong or cordate attached by their bark a little above the base, at first introrse at length versatile; ovary on the top of the disk, ovoid 5 celled attenuated into a style, stigma dilated, ovaries 8-12 in each cell in 2 series, pendulous, capsule coriaceous or membranaceous 5 celled, 5 valved dehiscing from the apex, septifragal, valves 2 lamellate separating from the axis which is 5 angled, seeds pendulous compressed imbricate produced downwards into a wing, albumen sparse fleshy, cotyledons sub-foliaceous, radicle short superior exserted. Tall trees, leaves unequally pinnated, leaflets opposite or nearly so, many paired, unequal sided, panicles terminal flowers small.

CEDRELA TOONA. (Roxb.) Leaves abruptly pinnate, leaflets from 6 to 12 pair, ovato-lanceolate, acuminate, $2\frac{1}{2}$ to 5 inches long $1\frac{1}{4}$ to $1\frac{3}{4}$ broad, slightly undulated on the margin, quite entire or slightly and distinctly toothed glabrous, panicles drooping, petals ciliated, staminodes none; ovary with a very short stalk and 8 ovules in each cell, capsule oblong. *Roxb. Fl. Ind.* i. 635.—*W.A. prod. p.* 124.—*W. Ic. t.* 161.

A large tree with an erect trunk and light grey smooth bark found in almost all the forests of the Madras Presidency, Bombay, Mysore, Bengal and Birmah—it ascends the mountains to an elevation of about 4000 feet, confines itself generally to the dry deciduous tracts of forest, but is sometimes met with in sholas. It is the white cedar of Europeans, and is often but erroneously called the Chittagongwood; it is known by the name of Toon in Bengal, Suli and Màli in the Salem district, Kal Kilingi on the slopes of the Nilgiris, and Sandani Vembu in Tinnevelly. It is often employed as an avenue tree and is much planted for this purpose in some parts of the Salem district. It grows very readily from seed, and the Forest Department have now a considerable plantation of it on the Shevaroys near Salem. The timber is well known, it is of a light rose color, strong, tolerably light and close-grained, and is much used for furniture and cabinet purposes and also for building. In Assam admirable boats are made from it. The tree flowers in April and May—its flowers are very fragrant and are used in Mysore for dying a red color called Gulinari: the seeds ripen towards the end of the rains: the bark is a powerful astringent and is useful in cases of fever, diarrhœa and dysentery, and the natives apply it when powdered externally in the treatment of ulcers. Nees. von Esenbeck has published an account of the analysis of the bark which indicated the existence of a resinous astringent matter, a brown astringent gum and a gummy brown extractive matter resembling ulmine. The tree is called Thitka-do in Birmah—it is curiously quite absent from Ceylon.

Cedrela Toona

(Roxb)

Govindoo del. Dunphy Lith:

CHLOROXYLON SWIETENIA. (Nat. ord. Meliaceæ.)

CHLOROXYLON. (D.C.) *Gen. Pl. p.* 340.—GEN. CHAR. Calyx short 5 parted, petals 5 patent unquiculate imbricate, disk thick 10 lobed pubescent, stamens 10 inserted into the sinuses of the disk, filaments subulate alternately longer, anthers cordate apiculate versatile, ovary pubescent half immersed in the disk depressed 3 lobed 3 celled style short, stigma obscurely 3 lobed, ovules 8 in each cell fixed to the axis ascending, capsule oblong coriaceous 3 celled, 3 valved dehiscing from the apex septifragal, seeds 4-6 in each cell ascending, extending upwards (in an opposite direction from the hilum) into a wing; embryo exalbuminous, cotyledons plano-convex, radicle short. A tree with abruptly pinnate leaves.

CHLOROXYLON SWIETENIA. (D.C.) Leaflets alternate or nearly opposite pale colored small from 10 to 20 pair, semi-cordate oblong unequal sided furnished with minute pellucid dots, flowers in terminal or axillary panicles. *W.A. prod. p.* 123. Swietenia chloroxylon. *Roxb. Fl. Ind.* ii. 400. *W. Ill.*

This is the well known Satinwood tree. It is common throughout the Madras Presidency, Mysore and in Ceylon, and is sparingly found in Bombay—it is generally found about the foot of hills and rarely ascends the slopes above a thousand feet or so. The wood is close grained and yellow, very hard and durable and excellent for turning, and is much used for furniture and picture frames as it takes a beautiful polish; it is however very liable to warp and split if not well seasoned in the shade. It stands well under water and is used for various purposes in the Gun Carriage Manufactory. It is much cut away in the Madras Presidency, as it is highly prized by the natives for ploughs, axil trees, oil presses, &c. but especially the former, so that fine trees are rarely met with except in out-of-the-way places (such as the Collegal forests.) I have met with it 8 *feet in girth, but it is found much larger in Ceylon. A cubic foot weighs about* 56lbs. *It is called Billu in Teligoo, Burus or Purush in Tamil, Bheyroo (Oorea), in Gumsoor, Dhoura in Hindustani, Vàee mara in Tinnevelly, Billu and Huldà in Bombay, Buruta gass in Ceylon. It flowers in the hot season and ripens its seeds in the rains. I do not know of any attempts to plant it.—The tree yields a wood oil. The natives apply the leaves to wounds. "Flower Satin" is obtained from the root in Ceylon.*

GOVINDOO, DEL: J. DUMPHY LITH:

Chloroxylon Swietenia (D.C.)

MELIA COMPOSITA. (Willd.—Nat. order Meliaceæ.)

MELIA. (Linn.) *Gen. Pl. p.* 332.—GEN CHAR. Calyx 5-6, partite, lobes imbricate, petals as many as calyx lobes, spreading contorted in æstivation. Stamens 10-12 monadelphous anthers included within the slightly dilated 10-12 fid-mouth of the cylindrical tube, ovary 3-6 celled, style slender, stigma capitate, ovules 2 in each cell superposed, fruit drupaceous with a 1-5 celled bony putamen—trees, leaves alternate 2-3 pinnate (or simply pinnate), panicles ample axillary usually collected towards the ends of the branches.

MELIA COMPOSIT. (Willd.) Young shoots petioles and panicles very mealy, leaves bi-tripinnate alternate 12 to 18 inches long, pinnæ about 3 pair, leaflets 3-7 pair to each pinnæ, ovate acuminate crenulated glabrous 2 to 3 inches long, panicles axillary scarcely half the length of the leaves, flowers numerous small whitish inodorous, calyx and petals mealy, stigma large with a 5 pointed apex, drupe ovate the size of a large olive, smooth and yellowish green when ripe.—*W. A. prod: p.* 117.—Melia robusta. *Roxb. Fl. Ind.* ii. *p.* 397.—M. superba. *Roxb. l. c. p.* 396.

A very large and most handsome tree with a smooth dark brown bark. Common in Malabar, Wynaad, Coorg, Mysore, and South Canara and other parts of our Presidency. It is known to natives by the name of Mallay Vemboo which is applied also to Melia Azadarach, and its timber is often used by planters for building purposes ; it may however be said to be scarcely known in our Presidency, and as a quick growing tree of great ornament it is very desirable it should be introduced to Madras and elsewhere for avenues and ornamental planting—it seeds well and grows readily from seeds. Seeds sent by Dr. Berry many years ago from Malabar to the Calcutta Botanical Gardens produced in 7 years trees of a height of 46 feet and a circumference of 44 inches 4 feet from the ground. It is common in Ceylon and is known by the native name of Lunu Midellà, and Mr. Ferguson of that Island says the timber is very light and cedar-like and in use for outriggers of boats and for ceilings, and that it is said white-ants will not attack it.

GOVINDOO, DEL:

DUMPHY, LITH:

Melia composita (Willd:)

MELIA AZADIRACHTA. (Nat. ord. Meliaceæ.)

For Gen. Char. see under "M. composita."

MELIA AZADIRACHTA. (L.) Leaves simply pinnate, leaflets ovate lanceolate, unequal sided, acuminated serrated, panicles axillary, flowers small white, fruit purple size of an olive, 1-celled 1-seeded. *Roxb. Fl. Ind.* ii. 394;—Aria bepou. *Rheede Mal.* 4 *to* 52. Azadirachta Indica, *Ad. de Juss.*;—*W. A. Prod. p.* 118.

This has been separated from the genus Melia under the name of Azadirachta by Ad. de Juss. on account of its 1-celled, 1-seeded nut. Hook and Bentham, however, unite the 2 genera.

Called in Hindoostani the Nim, by which name the tree is well known throughout India. It is an ornamental tree, and is very much planted in avenues and topes; it is common throughout India, Birmah, and Ceylon, generally in a planted state, though occasionally in the forests; it grows well in almost any soil in the plains, and occasionally attains a very large girth. It is called Veypam in Tamil, Yàpà or Yepà in Telugoo, Kohomba in Ceylon, and is the Margosa tree of Europeans. The wood is very like mahogany, beautifully mottled, hard and heavy; it is much used for cart wheels and ordinary building purposes, and old trees yield a first-rate furniture wood which is well adapted for ship-building; it is much used in Bengal in the manufacture of idols, as it is so bitter that no insect will attack it. The bark is very bitter and is used as a substitute for Quinine, the leaves beaten into a pulp are externally applied with great efficacy in case of pustular eruptions in rheumatism, and for bruises, and sprains, and the leaves are said to be useful in keeping away the boring worm from books: the dried leaves are often added to common poultices by the natives, and are said to act in preventing glandular tumours from coming to maturity. The fruit yields an acrid bitter oil, which is exported from the Madras Presidency; it is said to have valuable antispasmodic properties, and is anthelmintic and stimulant. It is used by the natives as a remedy in leprosy and as a liniment for rheumatic affections; it is obtained by boiling or expression, is of a deep yellow color, and is used for burning in lamps. The bark yields a gum which is said to be a stimulant. A toddy, called Veypam Khalloo, is obtained from young trees.

Govindoo, del.

Dumphy, Lith:

Melia azadirachta (Linn:)

MELIA AZEDARACH. (Nat. ord. Meliaceæ.)

For Gen. Char. see under "M. composita."

MELIA AZEDARACH. (L.) Leaves deciduous 1-2 feet long, bipinnate glabrous, leaflets about 5 obliquely lanceolate, or ovate-lanceolate to elliptical acute or acuminate, serrate inciso-serrate or entire, petals nearly glabrous, fruit with a 5-celled putamen or by abortion with fewer cells. *W. A. Prod. p.* 117 ;—*D. C.* i. 621 ;—*Roxb. Fl. Ind.* ii. 395.

A handsome tree, attaining a height of about 40 *feet and a quick grower; it produces its sweet-scented lilac-like flowers in the hot season. It is found sparingly as a planted tree throughout the Madras Presidency, Bengal, Mysore, Bombay, &c., but rarely if ever met with in the jungles; it is a very ornamental tree and deserving of more attention. It is wild in China and in Africa, and has been naturalized in the South of Europe; the wood of older trees is handsomely marked, rather durable and in use for furniture; it is often called Bastard Cedar, and is apt to warp and split; the tree is called Mallay Vembu in Tamil, Taraku vepà in Telugoo, and in English is known as the Persian Lilac;—the seeds are often strung as beads, and a valuable oil is produced from them; the root is nauseous and bitter, and in use as an anthelmintic.*

Govindoo, del: Dumphy, Lith:

Melia Azedarach (Linn:)

ANOGEISSUS LATIFOLIUS. (Nat. ord. Combretaceæ.)

ANOGEISSUS. (Wall.) *Gen. Pl. p.* 687.—GEN. CHAR. Flowers densely aggregated on a common receptacle, calyx tube compressed 2 winged at the base, attenuated and much produced beyond the ovary and resembling a pedicel to the limb, limb campanulate or urceolate 5 fid deciduous, lobes valvate, petals 0. stamens 10 in 2 series, filaments filiform subulate exserted, anthers small cordate ; ovary 1-celled, style filiform, thickened at the base villous, stigma simple, ovules 2 pendulous from the apex of the cell. Fruit small, broadly trapezoid, 2-winged terminating in a long beak (the persistent calyx tube) 1-seeded. Seed ovoid, cotyledons convolute, trees or shrubs glabrous or sericeous, leaves alternate petiolate entire without glands or obscurely glandular at the base, flowers small yellowish, capituli axillary.

ANOGEISSUS LATIFOLIUS. (Roxb.) A lofty tree, 30 to 40 feet to the first branch, and up to 8 or 9 feet in circumference, bark smooth of a whitish color, branches numerous, spreading, forming a large high head, leaves alternate without glands elliptical or obovate obtuse or emarginate glabrous from 1 to 4 inches long and from 1 to 2 broad, peduncles axillary bearing several ramifications each supporting a little globular head of small yellow flowers. *Wall. L. n.* 4015 ;—Conocarpus latifolius, *Roxb. Fl. Ind.* ii. 442.

This is a very valuable timber tree, common throughout the Madras Presidency, Mysore, Bombay, Bengal and Ceylon, and attains a large size on many of our mountains ; it is common in the plains, and ascends the mountains to an elevation of about 3,000 *feet ; it is known by the names of Chirimàn and Sherimàn and Yella Maddi in Teligoo, Vellay nàgà and Veekàlie in Tamil, Dhobu in Oorea, Dhowrà and Dhàori in Hindustani and Mahratta, and Dàwu in Ceylon. Its wood is light colored with a purple heart ; it is close-grained and very durable when properly seasoned ; it is much used in house building and in ship building, and is one of the best woods for poles and axle-trees of carts, and is much used by the natives for agricultural implements. If left in the forests exposed to weather the wood rapidly deteriorates and is soon attacked by insects and white ants,—the wood from small trees wants the dark colored heart and is anything but durable. Except a few specimens in Botanical Gardens, there have been no attempts at planting this tree. The leaves are used by tanners. A gum exudes from the bark which is collected (as Dhàori ka gond) in Central India, and sold in the bazaars.*

Govindoo, Del: Dumphy, Lith:

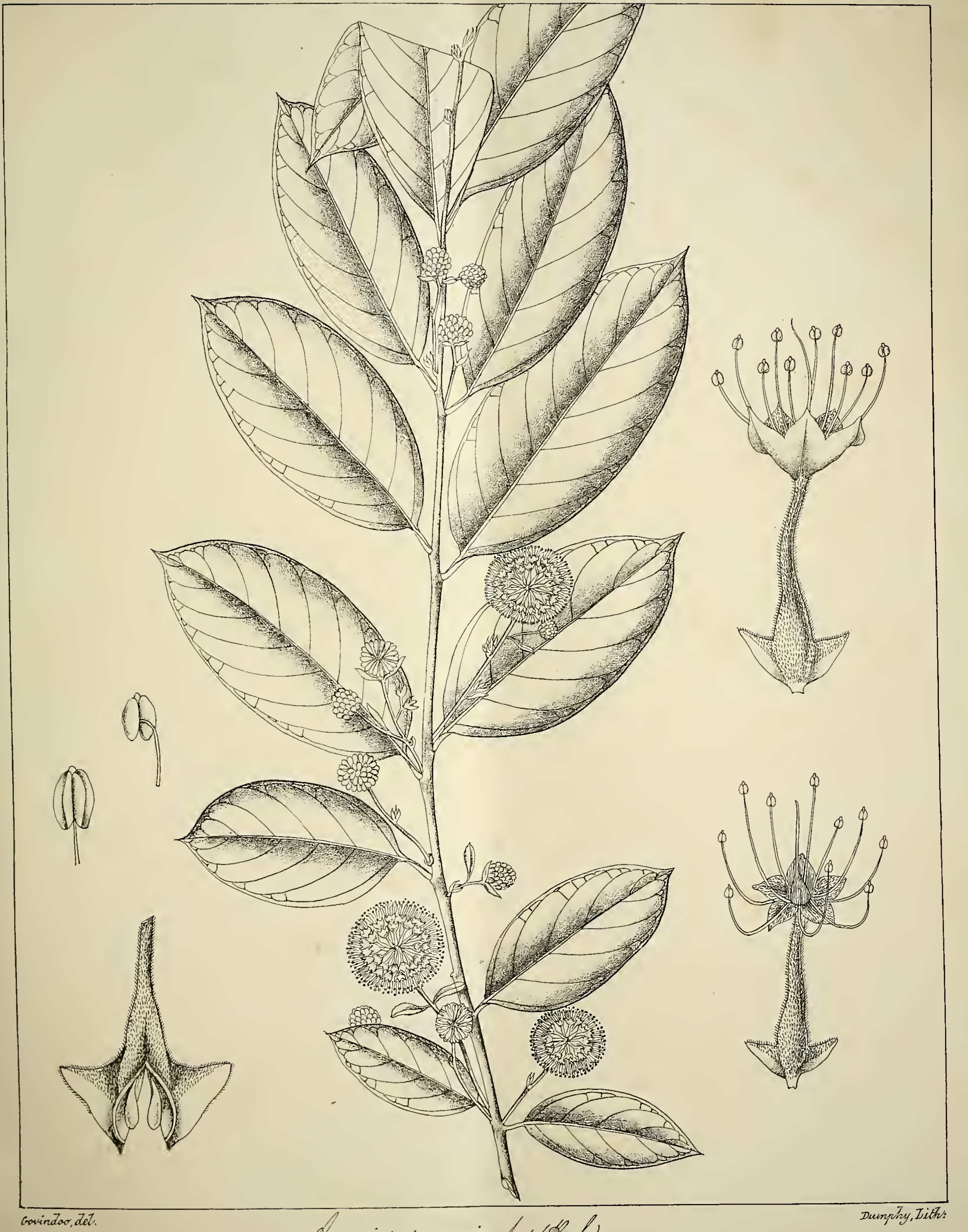
Anogeissus latifolius (Roxb:)

ANOGEISSUS ACUMINATUS. (Nat. ord. Combretaceæ.)

For Gen. Char. see under "A. latifolius."

ANOGEISSUS ACUMINATUS. (Roxb.) A lofty tree, but trunk seldom straight, up to 8 feet in girth, bark ash-colored, branches very numerous, spreading with their extremities pendulous (like the Weeping Willow) the whole forming a most beautiful large regular top, leaves short petioled alternate without glands oval or oblong-lanceolate pointed entire, when young downy when old smooth, about 2 to $3\frac{1}{2}$ inches long and 1 to $1\frac{1}{2}$ inch broad, peduncles axillary single simple with one head of flowers or occasionally with a second branch. *Wall L. n.* 4014;—Conocarpus acuminatus, *Roxb. Fl. Ind.* ii. 443.

A valuable and very ornamental tree, abundant in the Northern Circars, particularly in the Gumsur country (in the plains); but I have never observed it wild elsewhere in our Presidency. It is known by the Telugoo name of Parlchman. Dr. Brandis has found it in Birmah, where it is called Yoong. Its timber much resembles the preceding species, and has a purple heartwood; it is much used for building purposes, but will not stand exposure to water. The tree grows very well at Madras (there is a splendid specimen in the compound of the house known as the Collector's at Sydapett), and I have lately given some attention to raising it from seed, but all the plants at present are very young. It is certainly one of the most ornamental trees in our Presidency, and I hope ere long it will be largely planted; it is growing in the Calcutta Botanical Gardens.



Govindoo, del.

Dumphy, Lith:

Anogeissus acuminatus (Roxb:)

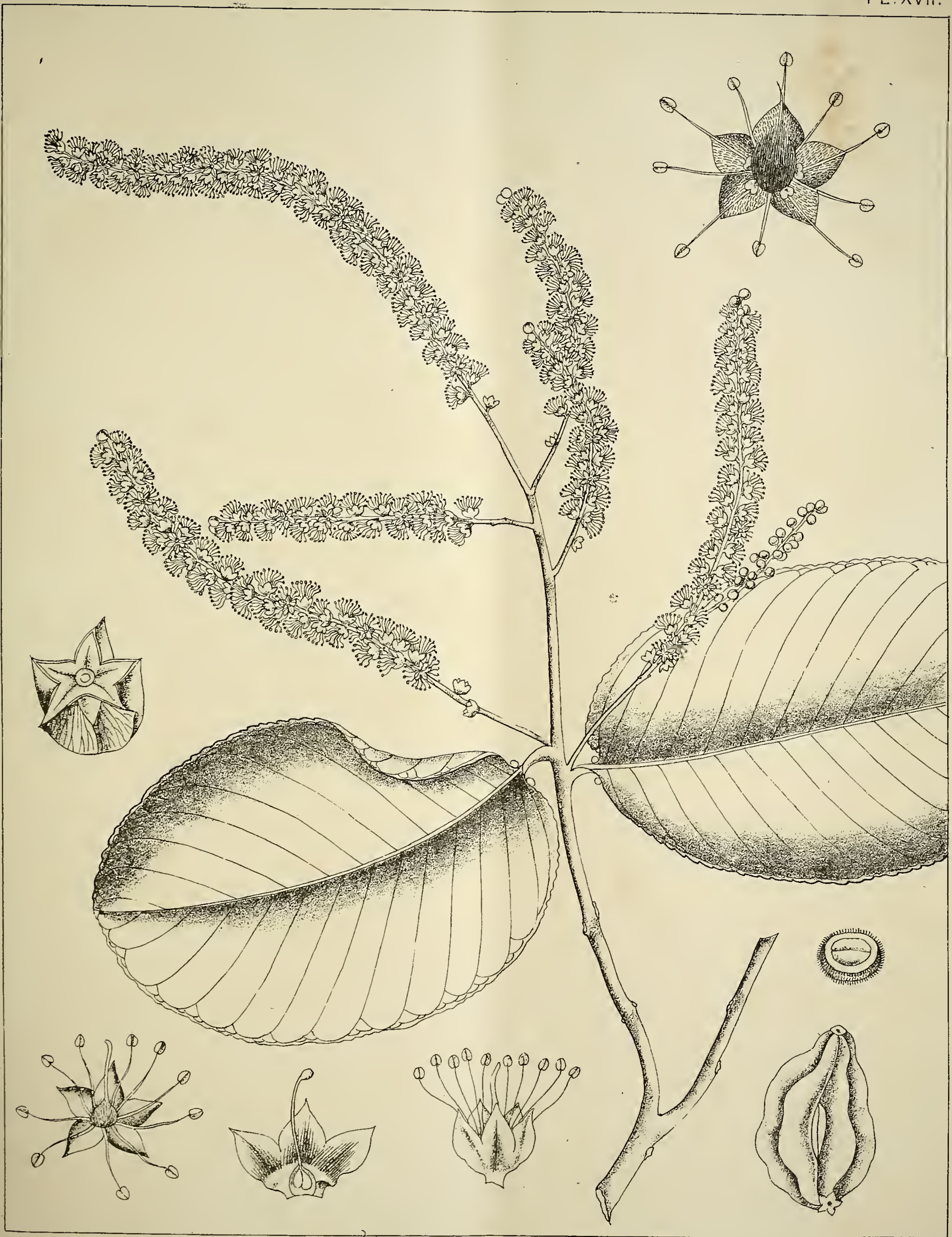
TERMINALIA TOMENTOSA. (Nat. ord. Combretaceæ.)

TERMINALIA, (L.) *Gen. Pl. p.* 685.—GEN. CHAR. Flowers hermathrodite or polygamo-diœcious, calyx tube ovoid or cylindrical, constricted above the ovary, limb deciduous urceolate or campanulate 5 dentate or 5 fid, lobes valvate, petals 0. stamens 10 in 2 series alteruately larger filaments subulate or filiform exserted, anthers small didymous. Ovary 1-celled style subulate, often thickened and villous at the base, stigma simple ovules 2, rarely 3, peudulous from the apex of the cell, fruit ovoid, augled, compressed or 2-5 winged 1-seeded, sarcocarp generally thiu or 0. rarely fleshy, putamen coriaceous or bony seed almond-like, testa membranaceous, cotyledons convolute. Trees or erect shrubs, leaves alternate or rarely opposite or sub-opposite, often crowded towards the apex of the branches, with glauds ou both sides at the base or on the midrib, or glandless, flowers spiked sessile small, green or white, rarely colored, bisexual in the lower part of the spike, male in the upper.

TERMINALIA TOMENTOSA. (Roxb.) A very large timber tree, often 70 or 80 feet to the first bough, and up to 12 feet in girth ; bark deeply cracked (or in one variety without any cracks), branches spreading, leaves sub-opposite short petioled oval, with a cordate (often unequal) base, to oblong or narrow-oblong obtuse or emarginate or slightly acute at the apex, entire or crenulated glabrous on both sides or more or less downy especially when young, up to 6 inches long by 4 broad, glands several on the midrib below generally near the base sessile or rarely stalked, panicles terminal or from the upper axils composed of a few simple long cylindric spikes, flowers sessile crowded of a dull yellow color generally hermathrodite below and male above, sometimes all hermathrodite, calyx glabrous or hoary, sometimes with 5 or 6 glands in the hair round the base of the syle, fruit enlarged into 5-7 equal longitudinal wings glabrous or rarely hoary. *W. A. Prod. p.* 314 ;—*Roxb. Fl. Ind.* ii. *pp.* 438, 439 and 440 ;—Terminalia crenulata, glabra, tomentosa, and coriacea, *W. A.*; Terminalia alata, *Ainslie*; Pentaptera glabra and tomentosa, *Roxb.* ; Pentaptera coriacea, *Roxb.*; Pentaptera crenulata, *Roxb.*

This is one of our most useful timber trees ; it is common throughout the Madras Presideney up to an elevation of 3,000 *or* 3,500 *feet, and grows to a very large size and very straight on the Anamallays, and very fine on the Nullaymallays (Kurnool), where the timber is highly prized, and more in use than any other ; it is also common in Mysore, Bengal, Bombay, and Ceylon. It is ealled Sàj in Hindustani, Sáhajo in Oorea, Karrà Mardà in Tamil, Maddee and Nallà Maddee in Telugoo, Matti in Canarese, and Koombook in Ceylon. The* Terminalia glabra of Roxb. *only differs in being more glabrous and having the bark nearly smooth, but the pubeseenee varies much, and I cannot look upon the two trees as distinct species. It is distinguished by the Telingees as Tella Maddee. The Banipu of the South Canara forests (probably* Pentaptera crenulata, Roxb.*) is also, I believe, only a variety of the same species, or at least elosely allied ; it differs in having very long stalked glands, ½ an ineh long, on the midrib below, often up as far as the centre of the leaf ; the tree does not, however, differ otherwise.*

Wood, dark-colored very hard, heavy, and strong, much used in house building, and for boats and canoes, solid wheels of carts, furniture, and many other purposes. The ashes from its burnt bark produee a kind of ehunam whieh is eaten by the natives with betel leaf ; the bark is astringent, and used for dying black and for tanning. This tree has been introduced into several of our plantations.



Govindoo, del.

Terminalia tomentosa (Roxb:)

Dumphy, Lith.

TERMINALIA PANICULATA. (Nat. ord. Combretaceæ.)

For Gen. Char. see under " Terminalia tomentosa."

TERMINALIA PANICULATA. (Roxb.) A fine large timber tree, branches diverging, leaves nearly opposite oblong to linear oblong with a more or less cordate base, acute or obtuse at the apex, entire, coriaceous, rugose above glabrous or rarely pubescent, with 2 sessile umbilicate glands beneath near the base, or glandless, spikes terminal forming a compound panicle, fruit with one large and two small wings. *W. A. Prod. p.* 315 ;—Pentaptera paniculata, *Roxb. Fl. Ind.* ii. 442.

A valuable timber tree common in most of the forests on the western side of the Madras Presidency, up to an elevation of 2,000 *or* 3,000 *feet, and also found in Bombay and Bengal, called Marwà in South Canara, Poo Mardà and Pillah Murdà in the Anamallays and Malabar. Dr. Roxburgh gives Pe Karkai as the Tamil name, and Neemeeri as Teligoo, but I never met with any one who knew either of these names. It is often called simply Matti or Mardah, the same name given to Terminalia tomentosa ; it is known by the name of Keerijul in the South Concan, where it is common along the foot of the Ghats. The timber is very good, but not equal to that of Terminalia tomentosa ; it is said to be improved by being kept under water. The bark contains tannin. The tree is not found in Ceylon, nor is it recorded from Birmah ; the tree grows in the Botanical Gardens in Calcutta, where seedlings attained a height of* 20 *feet with a circumference of* 18 *inches in eight years ; it has been introduced into our plantations at Nellumbur, and grows well from seed.*

Govindoo, del. Dumphy, Lith.

Terminalia paniculata (Roxb:)

TERMINALIA BELERICA. (Nat. ord. Combretaceæ.)

For Gen. Char. see under "Terminalia tomentosa."

TERMINALIA BELERICA. (Roxb.) A very large tree, with an erect trunk and large spreading head, flowering in the hot season, leaves crowded about the extremities of the branches, long petioled, oval to obovate obtuse or shortly acuminated, quite entire glabrous above and generally also beneath, 6 to 7 inches long by 2½ broad, with 2 opposite glands on the upper side of the apex of the petiole and sometimes near the base, spikes axillary solitary simple erect almost the length of the leaves, flowers small dirty-grey fetid, the male towards the apex of the spike and shortly pedicellate with a glandular disk at the bottom of the calyx, hermathrodite below and sessile, drupe obovate obscurely 5-angled, the size of a nutmeg, fleshy, covered with grey silky down. *Roxb. Fl. Ind.* ii. *p.* 341 ;—*W. A. Prod. p.* 313.

This fine large tree is common throughout the Madras Presidency, Bengal, Bombay, Birmah and Ceylon; it is universally known in this Presidency by the name Thani, which is both Tamil and Telugu, in South Canara it is called Santi, in Bengal Bahera, in Bombay Bherda, in Birmah Titseim, and in Ceylon Bulu. The wood is white and rather soft, but much used in some parts of the Presidency, and said to be tolerably durable; it answers well for packing-cases and coffee boxes, and catamarans and grain measures are made from it, and in Malabar and South Canara the tree is sometimes hollowed out for canoes; the kernels of the fruit are eaten by the natives, and also used medicinally; the fruit is used in dying and tanning, and the leaves also for the latter purpose; the dried fruit is said to be astringent and laxative (as the Ægle fruit); an oil is expressed from the seed, which is used for strengthening the hair, and a gum issues from wounds in the bark. The tree has been introduced into the Calcutta Botanical Gardens.

Govindoo, del. Dumphy, Lith.

Terminalia Belerica, (Roxb.)

TERMINALIA CATAPPA. (Nat. ord. Combretaceæ.)

For Gen. Char. see under "T. tomentosa."

Terminalia Catappa. (Willd.) A large tree, branches horizontal verticelled, bark smooth, of a dull olive color whilst young, leaves about the extremities of the branches glabrous subsessile obovate crenate and attenuated, but at the same time slightly cordate at the base ; a little repand with a large depressed gland beneath on each side of the midrib near the base, from 6 to 12 inches long, racemes axillary solitary simple shorter than the leaves, flowers numerous, small dull whitish, male most numerous above the hermathrodite, bracts minute deciduous, drupe oval compressed smooth with elevated navicular margins, convex on both sides, yellowish when ripe, nut oblong with a rough surface. *Roxb. Fl. Ind.* ii. 430 ;—*W. A. Prod. p.* 313 ;—Adamaram, *Rheede Mal.* iv. *t.* 3, 4.

A highly ornamental tree much planted throughout the Presidency, and met with in some of our forests, but doubtfully indigenous ; it is in flower and fruit throughout the year ; it is called the Indian Almond tree by Europeans, in Hindustani, Badam or Junglibadam, and in Malabar Nat vadom. It makes a good avenue tree, and is well worthy of extended cultivation. The wood is light but tolerably durable, and is used for various purposes, and the levers of Pakottahs are often made of it ; the kernels of the nuts are eaten and are very palatable; the oil expressed from the seeds is very like Almond oil, and the oil cake is used to feed pigs ; the bark and leaves yield a black pigment with which the natives color their teeth and make into Indian ink ; the juice of the leaves and milk of the nut are used medicinally; the tussa silk-worms feed on the leaves.

Govindoo, del. Dumphy, Lith.

Terminalia Catappa (Linn.)

PTEROCARPUS MARSUPIUM. (Nat. ord. Leguminosæ ; Sub-order Papilionaceæ ; Tribe Dalbergieæ.)

PTEROCARPUS. (Linn.) *Gen. Pl. p.* 547.—Calyx turbinato-campanulate, acute at the base, often incurved 5-toothed sub-bilabiate. Corol papilionaceous vexillum orbicular or broadly ovate ; wings obliquely obovate or oblong, keel petals distinct or slightly cohering, stamens 10 all connate into one sheath or equally diadelphous 5-5 or unequally diadelphous 9-1, anthers versatile, ovary stalked or sessile 2-6 ovuled, style filiform slightly incurved, stigma small terminal, legume compressed indehiscent orbicular or ovate more or less oblique or falcate, style lateral or rarely terminal, surrounded by a wing, woody and often rugose in the middle where the seed is lodged, seeds 1-2 separated by hard partitions oblong or subreniform radicle short incurved ; unarmed trees, leaves alternate unequally pinnated, leaflets alternate or irregularly opposite exstipulate, flowers yellow in axillary or terminal racemes or panicles.

PTEROCARPUS MARSUPIUM. (Roxb.) A large tree, trunk erect very high, but not often straight ; bark outer-coat brown, spongy, falling off in flakes, inwardly red, fibrous, and astringent, branches spreading horizontal, numerous, leaves alternate unequally pinnate 8-9 inches long, leaflets 5-7 alternate elliptic to oblong or obovate emarginate firm, above shining and deep-green 3-5 inches long by 2-3 broad, racemes simple or panicled axillary or terminal, flowers yellow, stamens 10 monadelphous or at length splitting into equal divisions of 5-5 each (isadelphous) legume stipitate obliquely orbicular, surrounded by a waved veined membranaceous wing, style lateral. *Roxb. Fl. Ind.* iii. 234 ;—*W. A. Prod.* 266.

Next to teak and blackwood, our most valuable timber tree, abundant throughout the Madras Presidency and in Mysore, Bengal, Bombay and Ceylon. Its size and manner of growth differ very much under different circumstances : it is often very poor and scraggy, but attains a fine size in our western forests and in favorable ravines, and subalpine jungles elsewhere ; it is seldom found " of any size" above 4,000 feet elevation, and is generally in flower in July, but I have seen it in flower at other seasons. It is most generally known by its Tamil name Vengay, and is called Yeggi in Telugoo, Bengha in South Canara, Hone in Mysore and Coorg, Beejâsâ, Peèa Sal or Peet Sál in Bengal, Bibla in Bombay, and Gammalu in Ceylon. The timber is dark colored and strong, and much prized for building purposes, and in some parts of our Presidency fetches as high a price as teak. Mr. Rohde says it is the best timber he knows for exposed venetians and weather boards ; it gives out a yellow stain when damp ; it is attacked by the Teredo navalis when used for the bottoms of ships, and is apt to warp if sawn green. A reddish gum resin exudes from wounds in the bark, which is known as Kino or Dragon's blood, and is largely exported from Malabar.

Gavindoo, del. Dumphy, Lith:

Pterocarpus marsupium (Roxb.)

PTEROCARPUS SANTALINUS. (Nat. ord. Leguminosæ.)

For Gen. Char. see under "Pterocarpus marsupium."

PTEROCARPUS SANTALINUS. A small tree, leaves alternate, unequally pinnate 6-8 inches long, leaflets always 3, lower pair alternate or sub-opposite, all broadly ovate to orbicular deeply emarginate or retuse at the apex, sub-cordate or rounded at the base, about 3 inches long by $2\frac{1}{2}$ broad, young parts and under surface of the leaves slightly sericeous, panicles terminal or axillary, calyx slightly puberulous, stamens isadelphous (5-5) legume surrounded by a wing (as in the genus) uniform, style lateral. *Roxb. Fl. Ind.* iii. 234.

This is the famous red sanders tree of commerce; it differs from the (Vengay) Pterocarpus marsupium (which it much resembles in flower and fruit) by always having 3 *instead of* 5-7 *leaflets. It was thus described correctly by Dr. Roxburgh, but subsequent authorities have described it erroneously as having* 5-7 *leaflets. It is abundant on the low hills about the Cuddapah and North Arcot forests, and the southern part of the Kurnool district, and I have seen a few trees in the Godavery forests. I have never met with it elsewhere in our Presidency, and it is not I believe found anywhere else in India; it is known by the native names of Shandum and Chandam. The wood is of a fine red color and beautifully streaked, very hard and heavy, and takes a fine polish; it is much used and highly prized by the natives for building purposes and for turnery in Madras and the districts in which it grows; it is also largely exported from Madras as a dye wood, and used as ballast; it is a very small tree, not often found over* $3\frac{1}{2}$ *or* 4 *feet in girth and about* 20 *to* 25 *feet in height, the largest trees reach* $4\frac{1}{2}$ *feet in girth, but are then much heart shaken or hollow. The largest tree in our plantations is five years old, and is* 18 *feet* 5 *inches high, and* 9 *inches in girth:—a bandy-load of selected logs will sell for as much as* 200 *Rupees, i. e., twenty logs at* 10 *Rupees each; the roots and stumps used for dying purposes, sell at* 6 *to* 9 *Rupees the* 1,000 *lbs. The cattle during the dry season are much fed upon the leaves of this tree, and young saplings are often bodily cut down by thousands by the cowherds.*

Govindoo, del. Dumphy, Lith.

Pterocarpus santalinus (Linn.)

PTEROCARPUS INDICUS. (Nat. ord. Leguminosæ.)

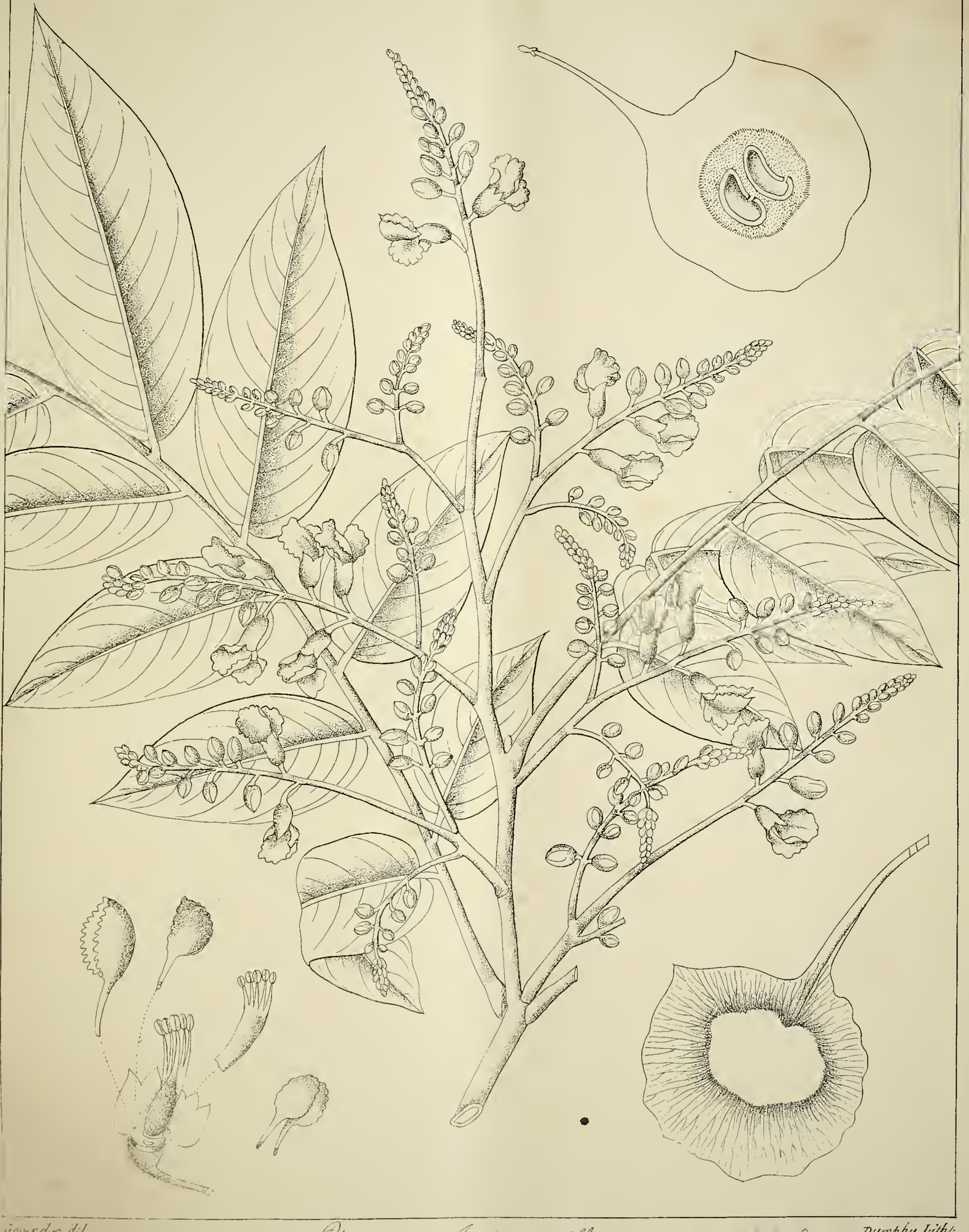
For Gen. Char. see under "Pterocarpus marsupium."

PTEROCARPUS INDICUS. (Willd.) A tree of considerable size, trunk straight, bark tolerably smooth ash-colored, leaves alternate unequally pinnate 6-15 inches long, leaflets 7-9 (rarely more) ovate acuminate firm and polished on both sides, alternate short petioled from 2 to 4 inches long by 1½ to 2 broad, racemes axillary at the apex of the branchlets and forming a terminal panicle flowers numerous yellow fragrant, stamens 10 monadelphous at length isadelphous (5-5) (the vexillum-stamen rarely free) legume stipitate obliquely suborbicular style lateral, seeds 1-2. *Roxb. Fl. Ind.* iii. 238;—*Willd. El. Sp.* iii. 904;—Pterocarpus dalbergioides, *Roxb. Fl. Ind.* iii. 236;—Pterocarpus Wallichii and P. dalbergioides, *Wight and Arnt. Prod. p.* 267.—(Pterocarpus flavus, *Lour*, and P. obtusatus, *Mig. Fl. Ned. Ind.* i. *p.* 136, both probably belong to this species.)

A very handsome tree, said to be indigenous to Southern India, but I have never met with it wild; it is cultivated in gardens and is well deserving of extended cultivation; it is common in Birmah, where it is called Pedowk, and in the Andamans, where it is known as red wood; it is also found in Malacca, Penang, Sumatra, Java, Philippine Islands, and South China. It yields a valuable red-colored beautiful timber, which is much used in the Gun-carriage Manufactories in Madras and Bengal. Dr. Brandis says that the wood is prized above all others in Birmah for cart wheels; the trees are felled green and split up into short planks 3 feet 6 inches long by 2 feet wide and 9 inches thick; three of these pieces make one wheel, and a pair are sold in the forests from 12 to 25 Rs.

The wood is used for furniture, and by the Birmese for musical instruments; it weighs about 60 lbs. the cubic foot.

Nyalokka wood from it
Padowk also see Balfour & Mason
pp. 776-7



Gwendo del. Dunphy, Lith.

Pterocarpus Indicus (Willd.)

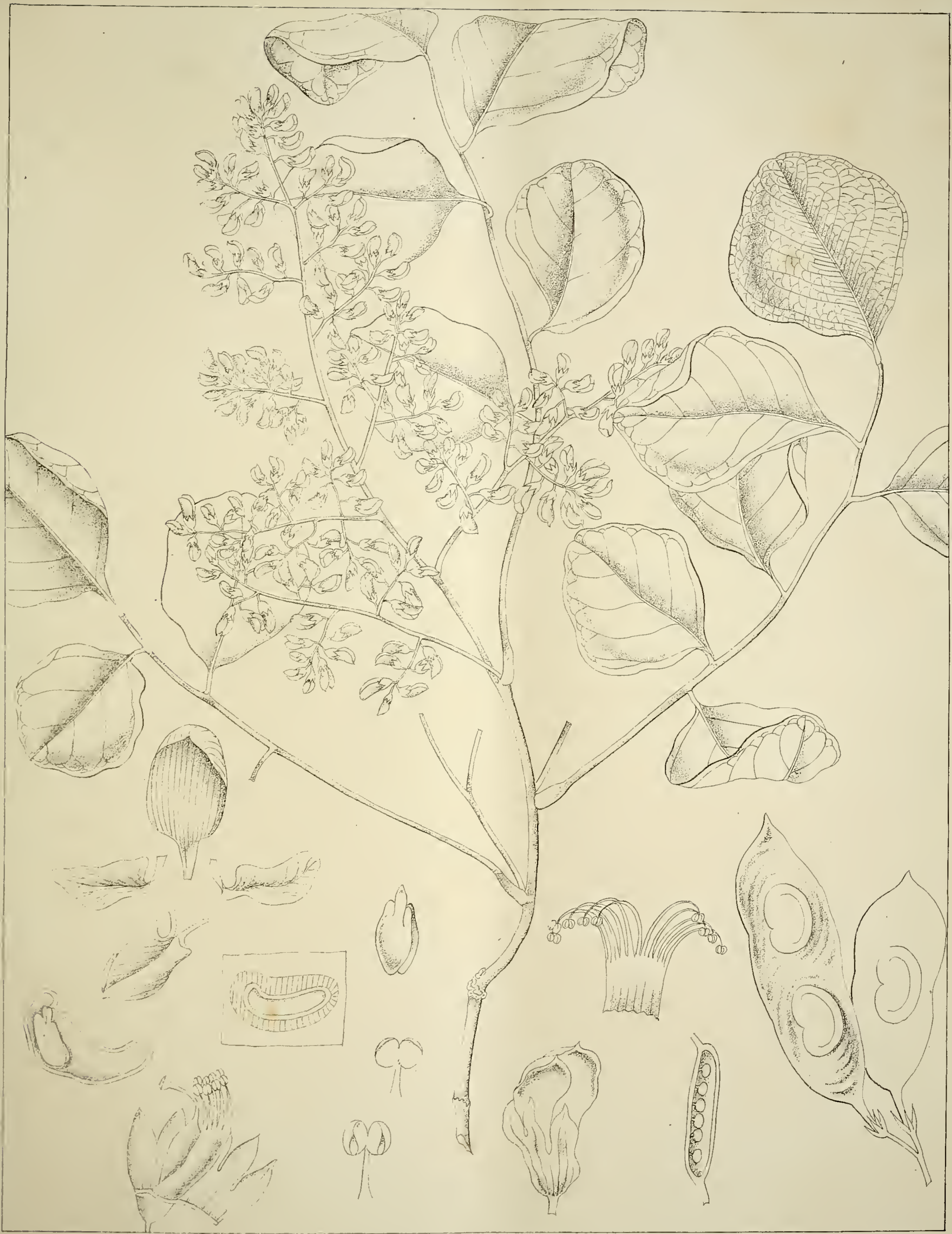
DALBERGIA LATIFOLIA. (Nat. ord. Leguminosæ; Sub-ord. Papilionaceæ ; Tribe Dalbergieæ.)

DALBERGIA. (L. f. Suppl. 52.) *Gen. Pl.* 544.—GEN. CHAR. Calyx campanulate 5-toothed, the 2 superior teeth broader, vexillum ovate or orbicular, wings oblong free, keel petals free or connate above, stamens 9-10 all connate into one sheath or the vexillum stamen free 9 and 1 or isadelphous 5-5, anthers small erect didymous, the cells opening at the top or rarely longitudinally, ovary stalked, few ovuled, style incurved small, stigma small terminal, legume oblong or linear thin flat and indehiscent, often wrinkled and thickened about the seed ; seeds 1 or rarely 2-4, large thin and flat in the centre of the pod. Trees or woody climbers, leaves alternate pinnate, the leaflets alternate with a terminal odd one (very rarely 1 foliate), flowers small in dichotomous cymes or irregular panicles.

DALBERGIA LATIFOLIA, (Roxb.) A very large timber tree, trunk erect though rarely straight, rising to a great height and of very large girth, branches spreading, very numerous, forming a large shady head, leaves alternate pinnate with an odd one 6-9 inches long, leaflets 3-7 generally 5 alternate, the exterior ones largest and roundish, emarginate, a little waved above, smooth, covered with a little whitish down beneath, at length glabrous, about 2 inches long and the same broad, petioles round smooth $\frac{1}{4}$ to $\frac{1}{2}$ an inch long, panicles axillary terminal glabrous or minutely hoary, flowers small white on short slender pedicels, calyx segments oblong more or less obtuse, petals unquiculate, stamens 9 monadelphous, style subulate, stigma small, nearly as long as the ovary, ovary stalked, 3-7 ovuled, legume stalked, oblong lanceolate usually 1-seeded. *Roxb. Fl. Ind.* iii. 221, and Dalbergia emarginata, *l. c. p.* 224 ;—*W. A. Prod. p.* 264.

This is the well-known blackwood or rosewood tree. It is found throughout the Madras Presidency, Mysore, Coorg, Bombay, Central India, and parts of Bengal, Sikkim, and in the Andaman Islands; it grows to a very large size on the mountains, particularly on the western side of our Presidency; and I have measured trees considerably over 20 *feet in girth; it is generally known in our western forests by the Tamil name Eetee, and on the eastern side by the Telugoo names Jitegee and Yerugudu, and in Mysore and South Canara by the Canarese names Biti and Thodágatti, and in Bengal it is called Sit Sāl. It is not found in Ceylon, nor I believe in Birmah. It ascends the mountains to nearly* 4,000 *feet, and grows equally well in the dry deciduous forests with teak, and in the moist evergreen sholas, and is often associated with bamboo. The timber is one of the most valuable in India, and generally fetches a higher price than teak; it is very heavy, strong, fibrous, close-grained and durable; it differs much in color but is generally purple-black; it admits of a very fine polish, and is our best furniture wood, and extensively used for Gun-carriage purposes. It grows readily from seed but is of very slow growth, particularly when young. The Forest Department have had plantations of it for some years in South Canara and Malabar, but the plants are still very small: self-sown seedlings are generally to be met with about Coffee Estates in our western forests; the tree flowers in March and April.*

The Dalbergia sissoides (Graham), common about the forests of the Coimbatore district, Palghat, the Anamallays, Madura and Tinnevelly, is a smaller tree than that of D. latifolia. The wood is generally of a redder color, and the tree flowers in the rainy season (July), instead of the hot weather; it is always distinguished by the Palghat axmen as the Ecruputu, the D. latifolia being called Eetee (Dr. Wight transposes these native names). I cannot however distinguish the two trees botanically; the flowers of the sissoides are said to be rather larger and the leaves narrower, but these differences are not constant, and the same drawing might answer for either tree: I cannot therefore look upon sissoides as more than a variety of latifolia.



Govindoo del.

Dumphy, Lith.

(Dalbergia latifolia, Roxb.)

DALBERGIA SISSOO. (Nat. ord. Leguminosæ.)

For Gen. Char. see under "Dalbergia latifolia."

DALBERGIA SISSOO. (Roxb.) Trunk generally more or less crooked, high and of great thickness, branches numerous spreading, bark on young trees ash-colored and pretty smooth, when old deeply cracked and very thick; young shoots downy, leaves alternate pinnate, leaflets alternate 3-5 orbicular or obcordate with a short sudden accumination, slightly waved on the margin; when young pubescent, when old glabrous and shining 1 to 3 inches each way, the inferior ones smaller; petioles round waved, stipules lanceolate caducous; panicles axillary composed of several short subsecund spikes, flowers subsessile small yellowish white, bracts small caducous, calyx pubescent campanulate, segments oblong, two upper ones obtuse, three lower acute with the centre one longest, corol as in the genus; stamens nine, all united into a sheath open on the upper side; style long included in the sheath with the pubescent ovary at the apex on a level with the anthers, stigma large glandular, legume stalked 2-2½ inches long linear-lanceolate membranaceous, 1-3 seeded, seeds compressed reniform. *Roxb. Fl. Ind.* iii. 223;—*W. A. Prod. p.* 264.

A very handsome tree of considerable size, with a trunk up to four feet in diameter; it is abundant in the plains of Central India and at the foot of the Himalayas where it is common in river-beds, but ascends to an elevation of 4,500 *feet; it is cultivated and planted as an avenue tree in the Madras Presidency, and as it grows rapidly in almost any soil, its extended cultivation is desirable. The wood is tolerably light and remarkably strong, in color a light greyish brown with darker colored veins, it yields ship builders in Bengal their crooked timber and knees, and is used for gun carriages and mail carts and furniture; it is called Sissoo, Tàli and Shisham in Hindoostani, and is universally known by the former name. It grows readily from seed, flowers at the beginning of the hot weather, and ripens its seed towards the end of the year, and is said to attain maturity in about* 30 *years. It has a specific gravity of* 724, *a* 6 *feet bar* 2 *inches square, only broke with* 1,104 *lbs. (in Baker's experiments). White ants seldom if ever attack it: a cubic foot weighs* 68 *lbs. green, and* 48 *lbs. dry; the raspings of the wood are officinal, being considered alterative.*

Dalbergia Sissoo (Roxb.)

Govindoo, del. Dunphy, Lith.

HARDWICKIA BINATA. (Nat. ord. Leguminosæ ; Sub-order Cæsalpinieæ ; Tribe Cynometreæ.)

HARDWICKIA. (Roxb.) *Gen. Pt. p.* 586.—GEN. CHAR. Calycine segments 3-5 petaloid, orbicular or ovate subequal, very much imbricated, scarcely cohering at the base or forming any tube ; corol none, stamens 6-10 distinct inserted into the bottom of the calyx, alternately shorter, anthers small, cells dehiscing longitudinally, ovary sessile free, ovules 2 on the ventral suture close to the apex, style filiform with a large peltate stigma, or slightly winged with a small stigma, legume (in H. binata) lanceolate cuneate, compressed, 2-valved opening at the apex, 1-seeded, seed pendulous in the apex of the legume obovate thin and somewhat membranaceous on the one edge, albumen none, cotyledons thinly carnose, radicle short erect. Trees unarmed, leaves abruptly pinnate 1-3 pair coriaceous, flowers small, racemes axillary panicled, bracts minute.

HARDWICKIA BINATA. (Roxb.) An elegant tree, trunk tolerably straight, bark deeply cracked, branches spreading, leaves alternate petioled, petioles ½ to 1 inch long, leaflets 1 pair opposite sessile with a bristle between them, between semi-cordate and reniform, obtuse, entire very smooth on both sides, 3-6 veined at the base, 1 to 2½ inches long, by about half that in breadth, when young tinged with red, stipules small cordate caducous : panicles terminal and from the exterior axils, flowers pedicelled scattered small, bracts minute caducous, calyx somewhat hoary on the outside often dotted, yellowish within, filaments generally 10, rarely 6-8, anthers with or without an acute point between the lobes, style filiform, stigma large peltate, legume lanceolate 2 to 3 inches long, 2-valved striated lengthways, opening at the apex, seed solitary in the apex of the legume. *Roxb. Fl. Ind.* ii. *p.* 423.

The head-quarters of this valuable tree are the forests on both banks of the Cauvery north of Cauverypoorum, both in the Salem and Coimbatore districts, where it often grows almost to the exclusion of all other trees ; it is also abundant on the slopes of the Balarangams, near Collegal and at Hassanoor and Guzzlehutty, on the Cuddapah and Arcot hills, and the southern parts of the Nally Mallays, and it is also found in the Mysore District on the Circar Mountains, in the Godavery forests and in the Bombay Presidency. It is naturally of straight growth, but cattle being very fond of its leaves, it is pollarded to a frightful extent wherever it grows. It is heart-rending to see the damage done in the Cauvery forests. It is very generally known by its Tamil name "Achà," but is often called Karàchi in the Salem district, and Kàt udagu in some parts ; its Teligoo name is Năr Yepi, and it is called Kàmrà in Canarese ; its timber is of a reddish color, very hard, stony, and heavy, and of excellent quality ; it is a first rate building and engineering timber, but is not utilized nearly as much as it might be ; its bark yields a strong fibre much used by the natives in some parts. It grows from the level of the plains up to about 3,500 *feet elevation ; it is easily raised from seed, and is cultivated in the Botanical Gardens at Calcutta.*

A second supposed species of this genus (Hardwickia pinnata) was discovered many years ago on the Travancore hills, but I have not as yet been fortunate enough to find it ; it has quite similar flowers, but 3 *pair of leaflets, and the legume being unknown, it is not certain whether it belongs to this genus.*

Govindoo, del. Dumphy, Lith.

Hardwickia binata (Roxb.)

TERMINALIA CHEBULA. (Nat. ord. Combretaceæ.)

For Gen. Char. see under "Terminalia tomentosa."

TERMINALIA CHEBULA. (Retz.) A large tree, trunk rarely straight, bark ash-colored and cracked; branches numerous spreading, their extremities drooping and downy when young, leaves sub-opposite, shortly petioled ovate or oblong, acute or obtuse at the apex, obtuse or cordate at the base, entire when young clothed especially above with silky hairs, at length glabrous and furnished with one gland on each side of the base of the leaves and occasionally on the apex of the petiole; stipules none, spikes terminal or axillary, often panicled; flowers numerous small dull white, fetid, all hermathrodite, bracts solitary downy subulate 1-flowered, calyx bowl-shaped 5-toothed hairy, particularly on the inside, with five very hairy glands at the bottom surrounding the base of the style; filaments ten alternately a little shorter or equal in length, twice the length of the calyx, anthers small oval; ovary hairy 1-celled, with two ovules attached to the top of the cell, style rather shorter than the stamens, stigma acute, drupe oval about $1\frac{1}{2}$ inches long and about 1 inch in diameter, smooth of a pale greenish yellow very obscurely 5-angled, 1-celled, pulp hard and yellowish, nut oblong thick and very hard with a rough surface and obscurely 5-furrowed, seed solitary lanceolate. *Roxb. Fl. Ind.* ii. *p.* 433;—*Retz. obs.* v. *p.* 31. Myrobalanus chebula, *Gœrtn.*;—Melanoxylon cadika-maram, *Koen.*

This large tree is found all over the forests of the Madras Presidency, and is sometimes planted; it is also found in Mysore, Bengal, Bombay, Birmah and Ceylon; it is called Kàdakai in Tamil, Karakà and Karakà Maddi in Teligoo, Hara and Haldà in Hindustani, Heerdà in Canarese, and Araloo gass in Ceylon. The wood is of good quality, and much used for building purposes; the heart wood is yellowish brown, or dark brown, hard and heavy, and makes good furniture, but is cross-grained and difficult to work. In Birmah yokes and canoes are made of it. The tender leaves when scarce unfolded are punctured by an insect, and its eggs deposited therein, which by the extravasation of the sap, become enlarged into hollow glands of various shapes and sizes up to 1 inch in diameter; they are powerfully astringent, and make as good ink as oak galls: they also yield mixed with alum a good durable yellow dye. The fruit is an article of commerce for the large quantity of tannin which it contains. The fruit and gall nuts are both used medicinally by the natives.

Govadee, del. Dunphy, Lith.

TERMINALIA ARJUNA. (Nat. ord. Combretaceæ.)

For Gen. Char. see under "Terminalia tomentosa."

TERMINALIA ARJUNA. (Roxb.) A very large tree, bark smooth whitish or green, leaves sub-opposite linear-oblong, with an unequal obtuse or cordate base smooth on both sides, crenulate on the margin, acute or retuse at the apex, 6-9 inches long by $1\frac{1}{2}$ to 2 broad, furnished with two sessile glands at the base of the leaf just above the petiole, generally only visible when looking at the underside, but sometimes visible above; petioles up to half an inch long, spikes terminal panicled, calyx very hairy inside round the ovary and furnished with some sessile glands, stamens ten, the five opposite the sinuses inserted on the calyx above the base, the five opposite the teeth inserted at the base, style subulate stigma small, drupe ovate thick with five very hard thick rigid longitudinal wings and with the apex produced into a furrowed truncated point.—Pentaptera Arjuna and P. angustifolia, *Roxb. Fl. Ind.* ii. *p.* 437 *and* 438;—Terminalia Berryi, *W. A. Prod.* 314.

I cannot distinguish between Terminalia Arjuna and Berryi: the description and figure here given are taken from specimens collected in Tinnevelly.

A gigantic tree common throughout the Madras Presidency, growing near the banks of rivers, up to an elevation of 3,500 *or* 4,000 *feet; it is largely planted as an avenue tree, particularly in the Tinnevelly district, where it attains an immense girth and is often furnished with very large buttresses. It is also found in Bengal, Bombay and Burmah; it is called Kahua and Jamla in Hindoostani, and Vellà Mardà and Vellà matti in Tamil, and Arjoon in Bombay, and is generally called the White Matti by Europeans. The wood is used for building and various purposes, and boats are often made from it; it is inferior to the Terminalia tomentosa, but a valuable timber; it flowers in April and May, and the seeds ripen towards the close of the rains.*

Note that C. B. Clarke in the Flora Brit. Ind. 2. p. 448 quotes this table for the [illegible] plant without doubt, whilst Beddome does not give Ceylon as a habitat for this one, whilst for T. tomentosa, t. 17 he gives a full acct. of it & its habitat & quotes Ceylon as one of them without doubt.

Govindoo, del. Dumphy, Lith.

Terminalia Arjuna (Roxb.)

LAGERSTRÆMIA REGINÆ. (Nat. ord. Lythrarieæ.)

LAGERSTRÆMIA. (Linn.) *Gen. Pl. p.* 783.—GEN. CHAR. Calyx tube turbinato-companulate, lobes six ovate acute, petals six inserted into the jaws of the calyx unguiculate wavy and curled; stamens indefinite inserted into the bottom of the calyx, filaments filiform much exserted equal or six exterior longer, anthers versatile didymous or oblong recurved, ovary sessile included in the tube of the calyx 3-6 celled, style filiform flexuose, stigma capitellate, ovules very numerous, capsule surrounded below by the persistent calyx oblong thickly coriaceous smooth 3-6 celled loculicidally 3-6 valved; seed oblong compressed imbricated expanded into a membranaceous wing, ascending or horizontal, trees or shrubs, branches quadrangular opposite or verticelled, leaves quite entire opposite or the upper ones alternate, panicles axillary or terminal.

LAGERSTRÆMIA REGINÆ. (Roxb.) A good sized tree, leaves oblong glabrous 5-6 inches long by 2½ broad, panicles large terminal calyx tomentose, longitudinally furrowed and plaited, flowers very large rose-purple, petals orbicular waved shortly unguiculate, stamens all about equal, capsules about 1½ inches long 6-celled. *Roxb. Fl. Ind.* ii. *p.* 505.

This very ornamental tree is common in the western forests of the Madras Presidency, most abundant about the foot of the Sisparah ghat and of the Wynad and South Canara ghats; it does not often ascend above an elevation of 2,000 *feet. It is also found in Bengal, Bombay, Birmah and Ceylon; it is called Kadali in Tamil, Jarool in Hindoostani, Challà in Canarese, Adambæ in Malayalum, Taman in Mahratta (Concan), Pyimma in Birmah, and Mooroota in Ceylon. It is largely planted as an ornamental tree on the western coast, and in Madras Gardens and elsewhere. The timber is reddish or sometimes nearly white, tough and very durable under water, though it soon decays under ground; it is much used by the natives for building purposes and in boat making; in the Madras Gun Carriage Manufactory it is used for light and heavy field cheeks, fellocs and cart naves, framing and boards of wagons, limbers, and platform carts, and ammunition box boards. In Birmah Dr. Brandis says it is more in use than any other timber except Teak, and is prized for fittings of boats, hulls of canoes, house posts, planking beams, scantling for roofs, carts, and other purposes. In Ceylon it is used for casks and various other purposes. Its root, bark, leaves, and flowers are used medicinally by the natives.*

Govindoo, del.

Dumphy, Lith.

Lagerstrœmia Reginæ (Roxb.)

LAGERSTRÆMIA MICROCARPA. (Nat. ord. Lythrarieæ.)

For Gen. Char. see under "L. Reginæ."

LAGERSTRÆMIA MICROCARPA. (Wight.) A large tree, bark smooth and white with the old bark often hanging in thin flakes, leaves elliptic to ovate, often attenuated or acute at the base, and obtusely pointed at the apex, glabrous above, pale beneath, and often very finely downy, 3½ to 4 inches long by 2 inches broad, petioles ⅜ to ½ an inch long, panicles axillary and terminal, glabrous or hoary with minute pubescence, flowers very numerous white, calyx white outside with minute hoary pubescence, or subglabrous, six outer stamens longer than the others, capsule scarcely ½ an inch long. *Wight Icones. pl.* 109.

This tree has often been confounded with L. parviflora Roxb., from which it differs in its numerous panicled flowers and minute capsule, which is not much larger than a pea; the minute downy pubescence on the under surface of the leaves, which has been given as a mark of distinction in L. parviflora, is however often present in this species.

A very handsome tree, abundant in all the western forests of the Madras Presidency, but not met with on the eastern side; it is universally known by its Tamil name of Ventek, and is called Bolandur and Billi nàndi in Canaresc, and Veveylà in Tamil; it flowers in the hot weather, and its seed ripens in the rains. Young saplings have their branches very much winged: the wood is light-colored, straight-fibred, and elastic; it is very much used for building purposes flooring rafters, &c., and also in dockyards; if left in the forests exposed it very soon rots, and is rapidly attacked by white ants. It makes capital coffee cases.

Govindoo, del.

Dumphy, Lith.

Lagerstræmia microcarpa (Wight.)

LAGERSTRÆMIA PARVIFLORA. (Nat. ord. Lythrarieæ.)

For Gen. Char. see under "L. Reginæ."

LAGERSTRÆMIA PARVIFLORA. (Roxb.) A large tree, bark whitish, leaves oblong oval or ovate acute or obtuse, pale beneath and sometimes minutely downy, glabrous above, 1-2 inches long by ¾ to 1 inch broad, peduncles glabrous axillary as long or longer than the leaves, 3-6 flowered towards the apex, flowers white small, calyx subglabrous not furrowed; petals shortly unguiculate, six outer stamens longer than the others, capsule oblong a little more than an inch long, very like an acorn, 3-4 celled. *Roxb. Fl. Ind.* ii. 505.

A handsome tree, very common in the Northern Circars and on the Nullay Mallays (Kurnool District), but also met with (though rarely) on the western side of the Presidency, as I have seen trees in the Seegoor forests, found also in Bengal, Bombay, and Birmah, called Chinangi in Teligoo, Naneh and Bondareh in Bombay, and Bàkti, Dhavra or Dhàu in the Bijnoor forests, Tsambeloy in Birmah. The wood is whitish or light brown, close-grained, straight, fibred and elastic; it is much used for building purposes, beams and rafters, and for boat timber, ploughs, axe-handles, &c., and in Meerut it is in great request for buggy shafts.

Covindoo, del. Dumphy, Lith.

Lagerstrœmia parviflora (Roxb.)

LAGERSTRÆMIA LANCEOLATA. (Nat. ord. Lythrarieæ.)

For Gen. Char. see under "L. Reginæ."

LAGERSTRÆMIA LANCEOLATA. A small tree, leaves oblongo-lanceolate, or elliptic to ovate with a cordate base, smooth on both sides but pale and glaucous beneath, 2½ to 5 inches long by 1¾ to 2 broad, peduncles axillary two in each axil glabrous, as long or longer than the leaves, few flowered at the apex; flowers small white rather larger than in L. microcarpa and parviflora, six outer stamens much longer than the others, capsule as large as in L. Reginæ, 1½ inches long, very hard, 4-celled. *Wall. List.* 2120.

A small ornamental tree, common in the Bombay Presidency, and found in Mysore and at Courtallum, and cultivated in the Lal Bagh gardens at Bangalore. I do not know the timber, but it is probably like its congeners. In the northern part of the Bombay Presidency, it is called Sokutia, in the south Bondara.

Govindoo, del. Dunphy, Lith.

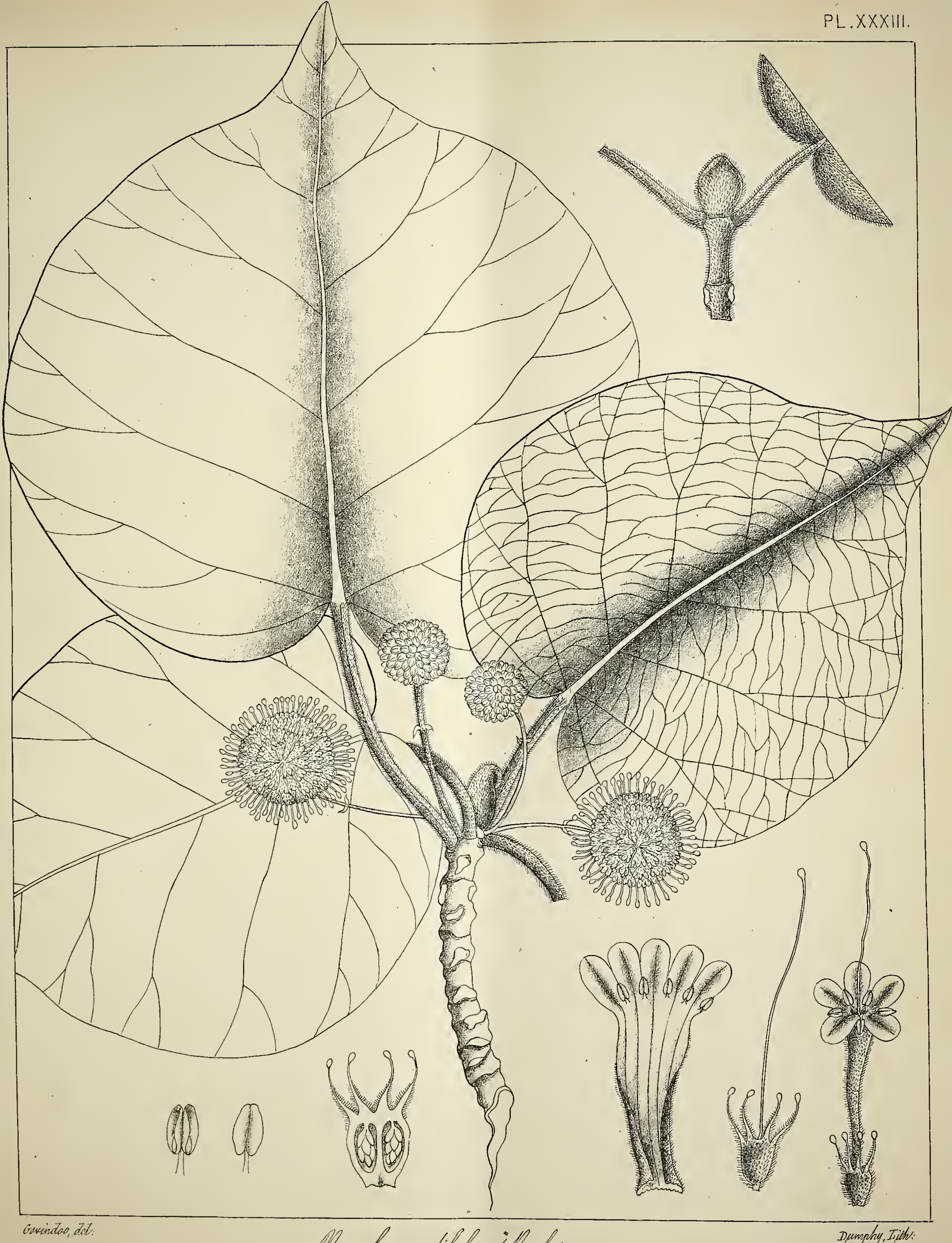
Lagerstræmia lanceolata (Wall:)

NAUCLEA CORDIFOLIA. (Nat. ord. Rubiaceæ.)

NAUCLEA. (Linn.)—GEN. CHAR. Flowers capitate sessile upon a globose receptacle, calyx tube oblong, limb either short or truncated or 5 partite with linear lobes, corol infundibuliform, tube slender with the throat naked, lobes five valvate in æstivation patent oval oblong, anthers either included or protruded shorter than the lobes of corol, style filiform protruded, stigma oblong or ovate terminal undivided, ovary cells two, placenta fixed near the apex of the cells pendulous, capsules 2-celled sessile upon a receptacle not tapering gradually at the base, seeds several imbricated, winged, or with a gland at the hilum, attached to an oblong placenta that is adnate to the dissepiment, embryo inverted in fleshy albumen, unarmed trees, leaves opposite or verticellate, stipules deciduous.

NAUCLEA CORDIFOLIA. (Roxb.) A very large tree, trunk often with buttresses, tolerably straight, bark brownish gray and cracked, branches very numerous, horizontal, forming a very large shady head, leaves opposite petioled, broad cordate pointed entire, above pretty smooth, downy underneath particularly when young, beautifully reticulated with small veins 4-12 inches each way, petioles round a little downy 2-3 inches long, stipules oval caducous, peduncles 1-4 together, axillary round downy 1 to 3 inches long, jointed about two-thirds of the way up and there bearing two small scariose roundish deciduous bracts, calyx segments clavate pubescent, corol pubescent, lobes spreading, anthers slightly protruded, style long, stigma shortly clavate. *Roxb. Fl. Ind.* i. 514.

An immense tree, tolerably common in most of the forests in the Madras Presidency, also in Mysore, Bengal, Bombay, Birmah and Ceylon, called Dudagu and Paspu kadambe in Telugoo, Haldee in Hindustanee, Manja Kadambe in Tamil, Ahnow in South Canara, Hnau in Birmah, and Kolong in Ceylon. The wood is close grained, smooth, fibred, light yellow in color, and is much used for building purposes, planking, &c., furniture chests, gun stocks, combs, &c. It will not stand wet. Dr. Roxburgh says it answers exceedingly well for furniture ; it flowers in June, and the seed ripens at the end of the rains.



Govindoo, del.

Dunphy, Lith.

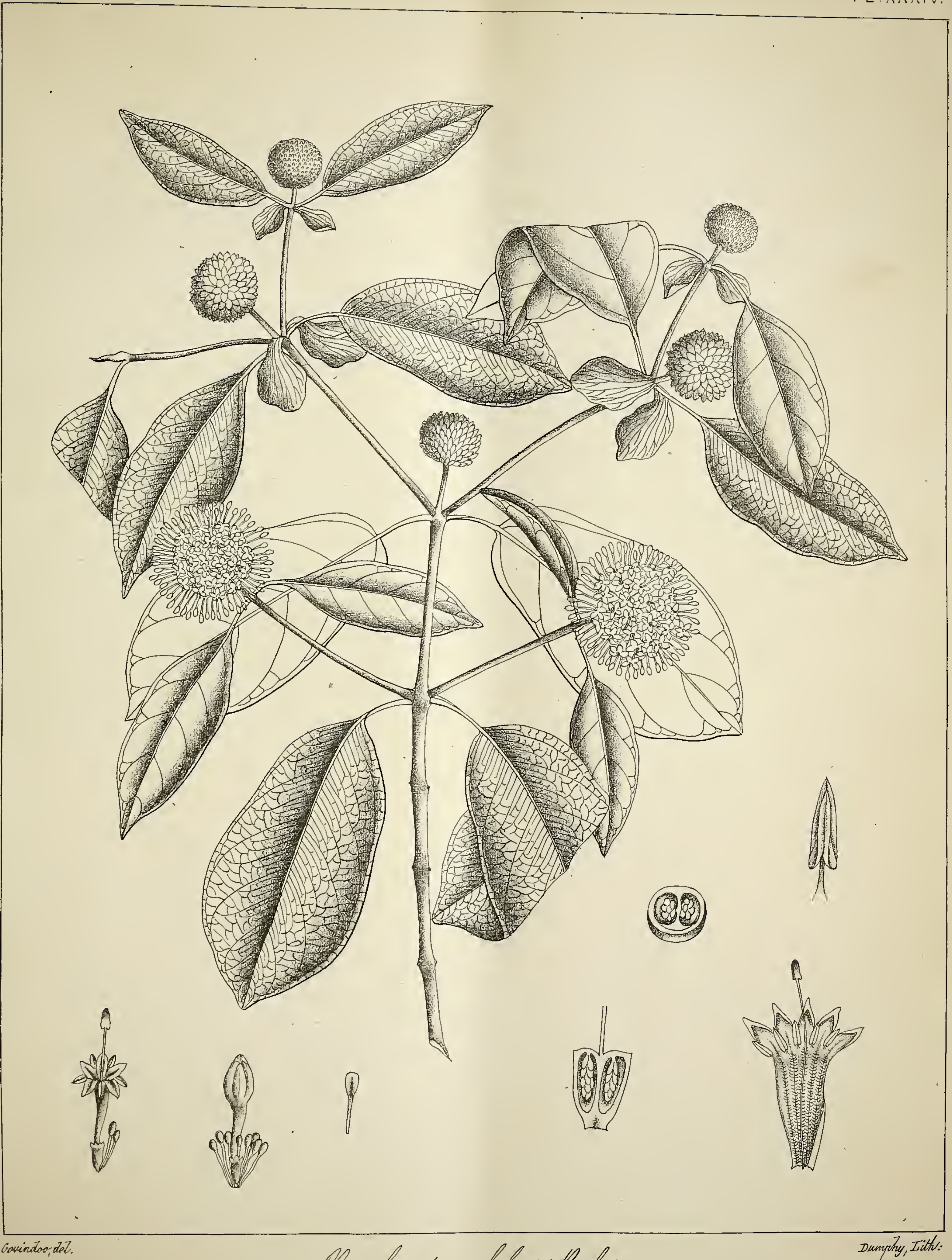
Nauclea cordifolia (Roxb.)

NAUCLEA PARVIFOLIA. (Nat. ord. Rubiaceæ.)

For Gen. Char. see under "N. cordifolia."

NAUCLEA PARVIFOLIA. (Roxb.) A large tree, trunk straight, bark brownish gray and crooked, peeling off in irregular patches, branches opposite numerous spreading, forming a large oval shady head; leaves opposite petioled ovate or oval or obovate, obtuse or with a short blunt point, entire, glabrous, except in the axils of the nerves beneath, 2-3 inches long by 1 to $1\frac{1}{2}$ broad, stipules large oval or oblong glutinous caducous, peduncles ternate, the opposite pair often passing into floriferous shoots bearing a pair of small deciduous leaves and jointed near the apex, intermediate or terminal peduncle short usually not jointed, limb of the calyx very short and almost truncated, corol light yellow, tube widening upwards, lobes pointed spreading, anthers pointed shortly protruding, style long, stigma narrow oblong calyptriform, capsules containing two cocci splitting at the inner angle. *Roxb. Fl. Ind.* i. 513;—Nauclea parviflora, *Pers. Syn.* i. *p.* 750;—Nauclea Orientalis, *Linn.* (*partim*).

This useful tree is common in almost every forest tract throughout the Madras Presidency, and is found in Mysore, Bengal, Bombay, Birmah and Ceylon; it is called Buta Kadambe in Tamil, Nir Kadambe in Teligoo, Congoo and Hedu in Canarese, Keim and Kangei in Hindustanee, Kadam in Bombay, and Hteim in Birmah. Its wood is light chesnut colored, firm, close-grained, and much in use for building, gun stocks, and various other purposes; it requires to be kept dry as it soon rots if exposed to wet. The leaves are used as fodder.



Govindoo, del.

Dunphy, Lith:

Nauclea parvifolia (Roxb:)

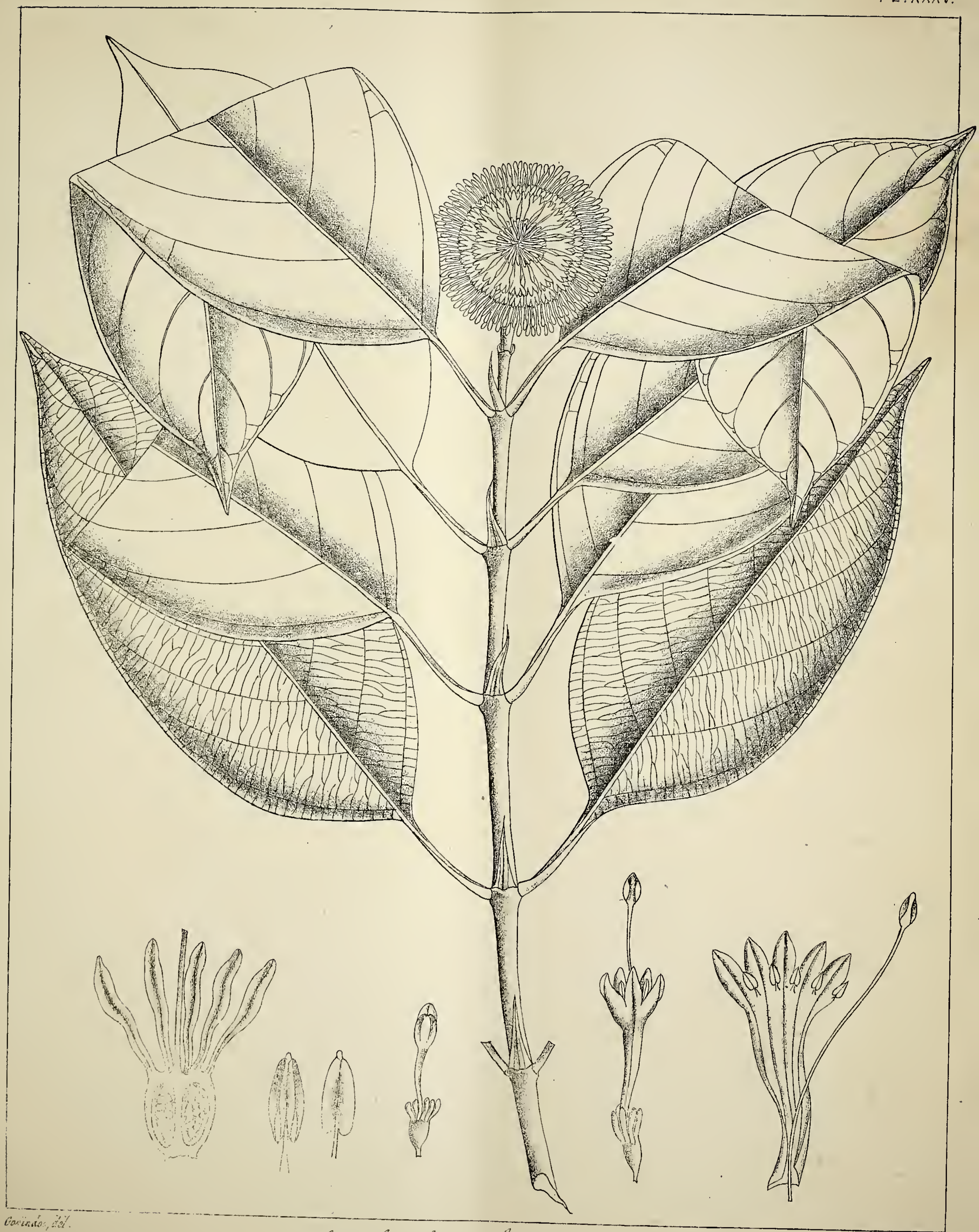
NAUCLEA CADAMBA. (Nat. ord. Rubiaceæ.)

For Gen. Char. see uuder " N. cordifolia."

NAUCLEA CADAMBA. (Roxb.) A large tree, trunk erect, perfectly straight, bark smooth dark grey, branches numerous horizontal, leavcs petioled ovate to oval, smooth entire 5 to 10 inches long, 2-3 inches broad, petioles smooth about 1½ inch long, stipules triangular with a long gradual acumination, peduncles solitary terminal, jointed about half way up, and there furnished with caducous bracts, flowers fragrant in a large orange colored head, with the white clubbed stigmas projecting, calyx with the division spathulate, sometimes two of them shorter than the others, lobes of the corol not recurved, style much elongated, stigma oblong, capsules 4-sided tapering from the apex to the base, near the top it is composed of four distinct hard cells, the lower two-thirds being only 2-celled, seeds numcrous very small angular brown colored. *Roxb. Fl. Ind.* i. *p.* 512;—Nauclea Orientalis, *Linn. (partim).*

This handsome tree is common in Bengal, Birmah and Ceylon, and if I am not mistaken in the species, also in the Wynad and Malabar on river banks. The drawing and description are taken entirely from Bengal specimens, as the Malabar tree may be N. parpurea Roxb., if that is distinct from Cadambe; it is called Kadam in Bengal (an universal name for different species of this genus), Halambe in Ceylon, and Maookadoon in Birmah; the wood is yellow, and is used for building and various other purposes. Dr. Brandis says it is loose grained, but recommended for furniture.

Nauclea elliptica Dalz., from N. and S. Canara, is an allied species, and there are several other species in Bengal and Birmah, some of which it is hoped may be figured in future numbers of this work.



Govindoo, del. Dumphy, Lith.

Nauclea Cadamba (Roxb.)

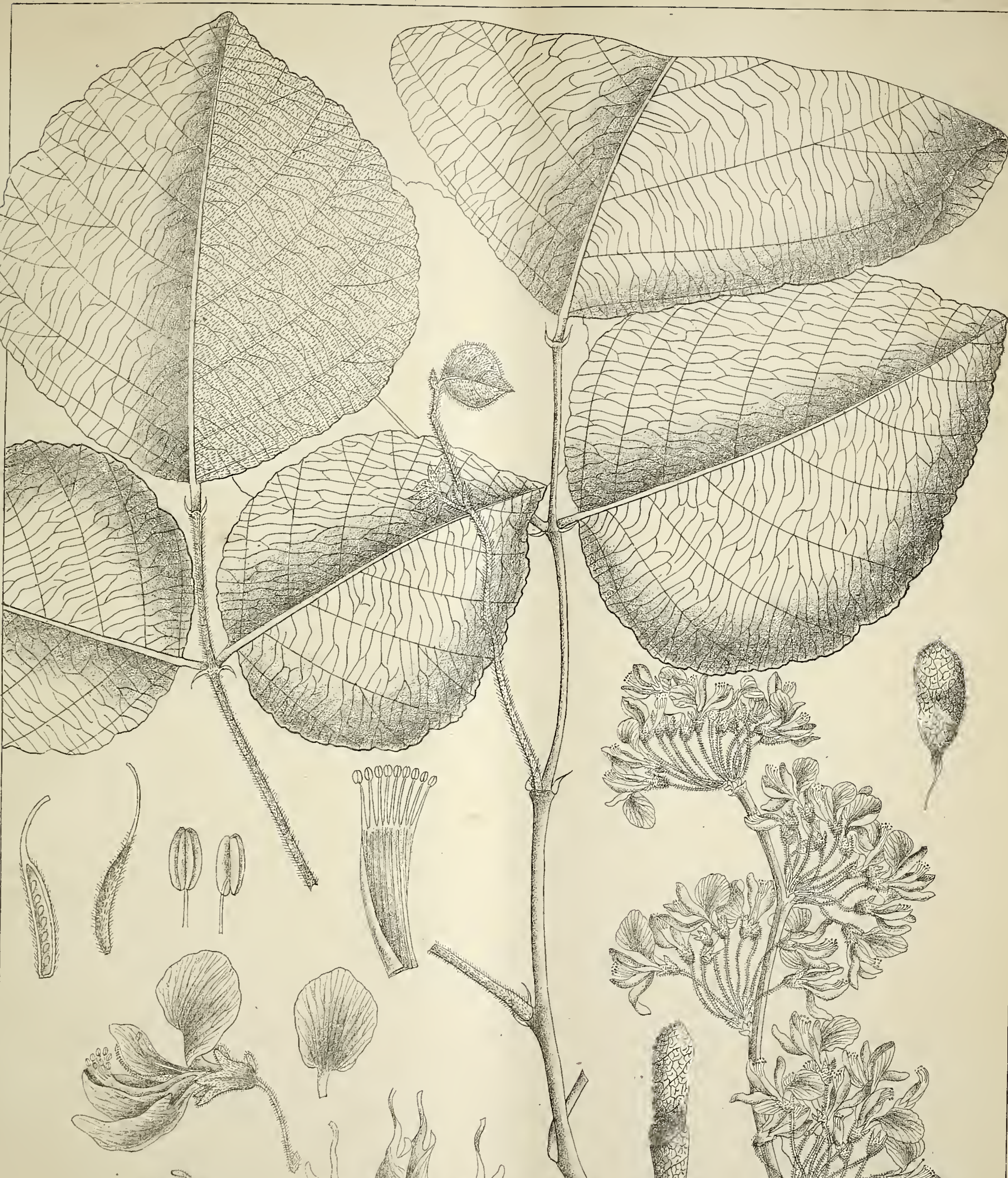
OUGEINIA DALBERGIOIDES. (Nat. ord. Leguminosæ; Sub-order Papilionaceæ; Tribe Hedysareæ.)

OUGEINIA. (Benth.) *Gen. Pl. p.* 518.—GEN. CHAR. Calyx sub-bilabiate, the upper division oblong bidentate, the under one three-parted, disk fleshy at the bottom of the tube; vexillum suborbicular, shortly unguiculate exappendiculate, wings obliquely oblong, keel slightly incurved obtuse about equal to the wings, stamens 10 monadelphous 9 and 1 anthers uniform, ovary sessile many ovuled, style incurved subulate, stigma capitate terminal, legume elongate plane, articulations 1-2 or more oblong, slightly reticulate, scarcely dehiscing, seed compressed reniform. A tree leaves pinnately trifoliate, leaflets large, stipulate, stipules free deciduous, flowers white or rose, in short racemes, bracts small squamæform, bracteoles below the calyx minute persistent.

OUGEINIA DALBERGIOIDES. (Benth.) A good sized tree, trunk tolerably straight, crowned with numerous spreading branches and branchlets, bark dark brown deeply cracked, leaves alternate petioled trifoliate, up to 12 inches long, leaflets the exterior one nearly round with an obtuse point about 7 inches long and 6 broad, the lower pair obliquely ovato-cordate obtuse pointed, 4 inches long, 3 broad, margins of all scolloped and much waved, firm in texture smooth above, a little villous beneath, racemes axillary and terminal, rarely compound; pedicels slender, colored villous, 1-flowered, bracts subreniform small villous caducous, bracteoles small, one at the base of the calyx persistent, flowers numerous rather small white or pale rose fragrant, calyx villous sub-bilabiate as in the genus, corol as in the genus, anthers oblong, affixed by the middle of their back, all uniform; legume linear oblong, obtuse veined articulated, slightly villous, seeds 1-3.—Dalbergia oojeinensis, *Roxb. Fl. Ind.* iii. 221.

A very valuable timber tree, found in the Godavery forests, Jubbulpore, Nagpore, and in different parts of the Bengal (up to 4,000 *feet) and Bombay Presidencies, but not observed anywhere to the south. It is cultivated in the Calcutta Botanical Gardens, and in* 14 *years attained a height of* 35 *feet. The wood is hard, strong, and very tough, heavy, and close-grained, and not unlike Sissoo, but handsome. It is much valued and is used for building, ploughs, wheels, carriage poles, and various other purposes, and it makes very handsome furniture.*

In the North Concan forests a kind of Gum kino is extracted from the bark, which is used by the natives in bowel complaints. It is called Tella Motku in the Godavery forests, Tewas at Jubbulpore and Oude, Sàndan and Sànan in Bignou forests, and Tunnus in Bombay.



Gover Doo del.

Dunphy, Lith.

Ougeinia dalbergioides (Benth.)

MILIUSA VELUTINA. (Nat. ord. Anonaceæ.)

MILIUSA. (Lesch.) *Gen. Pl. p.* 147.—GEN. CHAR. Flowers diæcious or hermathrodite; sepals 3, minute; petals 6, exterior 3 minute, equalling the sepals, interior 3 much larger slightly coriaceous, æstivation valvate; stamens indefinite, loosely imbricated and inserted on a cylindrical torus surrounding the ovaries; authers extrorse oval subdidymous 2-celled, connectivum scarcely apiculate; ovaries numerous linear-oblong, style oblong; ovules 1-2 rarely more, inserted on to the ventral suture. Trees or shrubs—(Hyalostemma, *Wall*).

MILIUSA VELUTINA. (Dunal.) A tree, branches densely tomentose, leaves ovate or oblong cordate at the base acute or obtuse at the apex, velvetty-tomentose on both sides, 3-6 inches long, $1\frac{3}{4}$ to 4 broad, petiole 2-3 lines long; peduncles short, pedicels 3-6 elongate, slender, densely tomentose ebracteate 2-4 inches long, flowers hermathrodite densely tomentose, interior petals broadly ovate, $\frac{1}{4}$ to $\frac{1}{3}$ inch long, densely tomentose outside, within subglabrous and blackish, ovaries downy 2 ovuled, carpels purplish-black puberulous about $\frac{1}{2}$ an inch long on very short pedicels; seeds 1-2,—*H. f. et T. Fl. Ind. p.* 151;—Uvaria velutina. *Dunal Anon.* 91;—U. villosa. *Roxb. Fl. Ind.* ii, *p.* 664.

I have only met with this tree in the Godavery forests and on the Circar mountains; it is also found in Bengal and Bahar, at the foot of the Himalayas, and in Birmah; it yields a strong, yellow wood, which is said not to warp; unseasoned it weighs 62 *to* 65 *lbs. the cubic foot, and* 50 *lbs. when seasoned, and its specific gravity is* ·800. *In the Godavery Districts the natives use it for house building and make cawars of it, and in Birmah it is used for poles of carts, harrows, yokes, spear-shafts and oars; it is called Pedda Chilka dudagu in Teligoo, and Thabookyee in Birmese; it is cultivated in the Botanical Gardens in Calcutta.*

Govindoo del. Dunphy, Lith.

Mitinsa velutina (Dunal.)

POLYALTHIA LONGIFOLIA. (Nat. ord. Anonaceæ.)

POLYALTHIA. (Blume.) *Gen. Pl.. p.* 25.—GEN. CHAR. Sepals 3, free or connate below, valvate or slightly imbricate in æstivation; petals 6, equal or sub-equal, valvate in 2 series in æstivation ovate or linear; stamens indefinite linear or cuneate, connective dilated and thickened beyond the cells; carpels indefinite, stigma oblong or capitate, ovules 1-2 usually erect, fruit carpels stipitate globose or oblong, 1 seeded; trees or shrubs, flowers solitary or fascicled axillary or extra-axillary.

POLYALTHIA LONGIFOLIA. (Wall.) A good sized tree, up to 50 feet in height and 6 feet in girth, leaves linear lanceolate acuminate waved on the margin glabrous shining 4 to 6 inches long by 1 to 1½ broad on petioles about ¼ inch long; peduncles long and slender, fascicled along the short lateral leafless shoots; flowers greenish yellow; petals equal, narrow lanceolate acuminate undulated; fruit oblong or ovoid, 1 seeded, purple when ripe. Guatteria longifolia. *W. A. Prod. p.* 10;—*Wall. L. n.* 6,442, Uvaria longifolia. *Roxb. Fl. Ind.* ii, *p.* 664;—Unona longifolia. *Dunal. Dc. Prod.* 1, *p.* 90.

This is a very handsome tree of erect growth and yielding a good shade. It is extensively planted at Madras and elsewhere in the Presidency as an avenue tree and for ornamental purposes. I have never met with it wild, but it is said by Dr. Wight to be indigenous in Tanjore, and it is also wild in the northern part of Ceylon. The timber is seldom used; it is whitish yellow in color, light and very flexible, tolerably close and even grained, and weighs 44 *to* 48 *lbs. the cubic foot when unseasoned, and* 37 *lbs. when seasoned; and its specific gravity is* ·592; *it is used for making drum cylinders. The tree flowers in February, and the seeds ripen in the rains, and the fruit is eaten by birds; it is called Deodâree in Hindustanii, and Assothee in Tamil.*

Govindoo del.

Dunphy, Lith.

Polyalthia longifolia (Wall.)

SACCOPETALUM TOMENTOSUM. (Nat. ord. Anonaceæ.)

SACCOPETALUM. (Bennett.) *Gen. Pl.* 1, *p.* 151.—GEN. CHAR. Sepals 3, small; petals 6, the 3 exterior about the size of the sepals, the 3 interior much larger, cohering together at the margins at length free, saccate at the base; torus subglobose; stamens indefinite in many series; anthers laxly imbricate, subsessile 2-celled; ovaries numerous, ovules in 2 series, 6 or more. Deciduous trees with the flowers appearing before the foliage or with the young leaves.

SACCOPETALUM TOMENTOSUM. (H. f. et T.) A good sized tree, branches rugulose, young ones fulvo-tomentose, leaves oval or ovato-oblong acute pubescent on both sides, rotundate or cordate at the base, thinly coriaceous opaque pale beneath 4-6 inches long $2\frac{1}{2}$-3 broad, petioles $\frac{1}{4}$ inch long; peduncles 1-2 lines long leaf-opposed 1-2 flowered, pedicels 2-3 inches long slender; sepals linear-oblong 2 lines long; exterior petals longer than the sepals linear, interior petals oblong obtuse puberulous on the outside tomentose within, $\frac{3}{4}$-1 inch long, torus densely villous; ovaries 4-7 ovuled; carpels 5-15 subglobose 1 inch long, fulvo-tomentose on pedicels about $\frac{1}{2}$ inch long, seeds 3-4 nestling in pulp. *H. f. et T. Fl. Ind.* 1, *p.* 152;—Uvaria tomentosa. *Roxb.* ii, *p.* 667;—*W. A. Prod.* 1, *page* 8.

A tall, handsome tree of very straight growth, not uncommon about the foot of the Ghats on the western side of the Madras Presidency, and also found in the Concan, Bahar, Orissa and Nepal. Nothing is known of the timber.

Govindoo, del.

Dumphy, Lith.

Saccopetalum tomentosum (Hook fil. et Thom.)

MIMUSOPS ELENGI. (Nat. ord. Sapotaceæ.)

MIMUSOPS. (Linn.) *End. Gen. Pl. p.* 741.—GEN. CHAR. Calyx 6-8 parted, divisions in two series ; corol hypogynous subrotate, divisions many in two series, 6-16 in the outer, entire or divided spreading, and 6-10 in the inner entire, erect ; stamens inserted on to the bottom of the tube of the corol, 6 or 8 fertile alternate with as many sterile ones, anthers sagittate extrorse 2 celled dehiscing longitudinally ; ovary 8 celled, ovules solitary in the cells attached to the middle or the lower end of the axis, style subulate, stigma acute ; berry by abortion 1-2 seeded, embryo erect, cotyledons large radicle cylindrical inferior.

MIMUSOPS ELENGI. (Willd.) A good sized tree, trunk erect, bark pretty smooth, branches numerous spreading, forming a thick head ; leaves alternate short petioled oblong pointed waved smooth and shining and of a deep green color, 3-4 inches long by 1-1½ broad, stipules small lanceolate concave rusty caducous, peduncles axillary 1-8 short clubbed undivided 1 flowered, flowers white fragrant, calyx 8 leaved in a double series, divisions lanceolate, the 4 exterior leathery larger and permanent ; corol tube very short, the 16 exterior segments spreading, the 8 interior generally contorted and converging, all are lanceolate and often jagged at the apex, stamens 8 fertile alternate with as many sterile hairy filaments which are sharp pointed or jagged at the apex, fruit oval smooth yellowish and edible. *Roxb. Fl. Ind.* ii, *p.* 236.

This is a very ornamental tree much planted in gardens by Europeans and Natives. It is indigenous in the jungles of the Western Coast, and also in the Circar mountains, Ceylon and Birmah. It grows to about 40 *feet high, with a trunk of about* 12 *feet to the first branches, and a girth of* 5-7 *feet. The timber when unseasoned weighs from* 72 *to* 82 *lbs. per cubic foot, and* 61 *lbs. when seasoned ; its specific gravity is* ·976, *it is close and even grained, pinkish to reddish brown in color, and takes a good polish. It is used in house building, cart shafts and for cabinet purposes. The tree is called Mulsari in Hindustanee, Magadam in Tamil, Poghada in Teligoo, Mugali in Canarese, Bukul in Bengali, Elengi in Malayalim, Moonemâl in Ceylon, and Kya-ya in Birmah. The flowers are very fragrant and aromatic, and the Natives distil an odoriferous water from them and use them for garlands, &c. The seeds yield an abundance of oil, which is used by painters ; the barks, root and fruit are used medicinally by the natives.*

Govindoo, del.

Mimusops Elengi (Willd.)

Dumphy, Lith.

BASSIA LATIFOLIA. (Nat. ord. Sapotaceæ.)

BASSIA (Linn.) *End. Gen. Pl. p.* 741.—GEN. CHAR. Calyx 4-6 parted divisions in 2 series, corol hypogynous campanulate, limb 5-14 parted erect, stamens inserted on to the inside of the tube twice or thrice as many as the divisions of the corol in 1-3 series, filaments very short, anthers extrorse or introrse, erect subsagittate 2-celled dehiscing longitudinally ; ovary 5-8 celled, ovules solitary in the cells erect or pendulous, style simple exserted, stigma acute undivided, berry 4-5 celled, seeds solitary in the cells, embryo exalbuminous, cotyledons fleshy. Trees, leaves alternate entire, peduncles axillary one flowered.

BASSIA LATIFOLIA. (Willd.) A good sized tree, trunk straight but short, covered with smooth ash-colored bark, branches numerous, the lower ones spreading horizontally, leaves alternate petioled crowded about the extremities of the branches oblong rigid smooth above, somewhat whitish below, 4-8 inches long, 2-4 broad, petioles round, about an inch long, stipules subulate downy ; flowers numerous crowded from the extremities of the branchlets on peduncles about one inch long, at all times bent downwards, calyx 4 leaved, corol limb 7-14 parted, ovary hairy 6-8 celled with one seed in each cell attached to the upper part of the axis, berry the size of a small apple ; seeds 1-4, very rarely more. *Roxb. Fl. Ind.* ii. *p.* 526.

This tree is found all over the Presidency, and in Bengal, Bombay, and Mysore, but more often in a cultivated state than wild ; it attains a height of 50 *feet and a girth of* 12 *feet, it does not ascend to any great elevation ; the timber is hard, strong and durable, not easily worked, close, even grained and of a reddish brown color. A cubic foot unseasoned weighs* 77 *to* 80 *lbs., and* 66 *lbs. when seasoned ; its specific gravity is* 1·056. *It is used for the naves of wheels, framing and pannelling of doors, windows and furniture, and for country vessels ; it is soon attacked by white ants. The tree is called Mohwa in Hindustanee, Kàt Illipi in Tamil, and Ippi in Teligoo ; it flowers in the hot season, and the flowers are sweet tasted and are eaten raw by the natives, and deer and jackals are very fond of them. An ardent spirit, not unlike whisky, is distilled from them in many parts of the country. The seeds yield by expression a large quantity of oil, which concretes immediately it is expressed, and retains its consistency at a temperature of* 95°. *It is coarse but used by the poorer classes in lamps, for the adulteration of ghee, and for frying cakes, and is used for making soap.*

Govindoo, del.

Bassia latifolia (Willd.)

Dumphy, Lith.

BASSIA LONGIFOLIA. (Nat. ord. Sapotaceæ.)

For Gen. Char. see under "Bassia latifolia."

BASSIA LONGIFOLIA. (Linn.) A good sized tree, trunk pretty straight but short, branches numerous, dividing much and spreading, forming a shady head, young shoots downy ; leaves crowded, about the ends of the branchlets lanceolate entire smooth 4-7 inches long by 1-1½ broad, petioles 1-2 inches long round slightly villous, stipules ensiform downy very early caducous, peduncles crowded round the base of the young shoots 2-3 inches long drooping 1 flowered ; calyx divisions 4 acute, corol tube length of the calyx gibbous thick and fleshy, limb 8-10 cleft segments sublanceolate, anthers 16-20 in 2 rows, one above the other attached to the inside of the tube, filaments scarcely any, ovary 6-8 celled with one ovule in each cell attached to nearly the top of the axis ; style twice as long as the corol, stigma minute, contracted ; berry oblong, size of a plum, villous pulpy when ripe yellowish. *Roxb. Fl. Ind.* ii. *p.* 523.

This is a common tree throughout the Madras Presidency, Mysore, Bombay, Bengal and Ceylon, but not found at any great elevation ; it is very much cultivated in topes and elsewhere on account of its oil. It attains to 50 feet in height and a maximum girth of about 6 feet, the timber is heavy, close and straight-grained, very flexible and durable, scarcely inferior to Teak in strength, and of a yellowish brown color. A cubic foot unseasoned weighs 70 to 75 lbs. and when seasoned 60 lbs. Its specific gravity is ·960; it is valued for keels of ships and for planking below the water line and makes good trenails, it is also used in the construction of carts when great strength is required, and for furniture, and in Ceylon for bridges. The oil pressed from the ripe fruit is used by the poorer natives as lamp-oil, and for cooking purposes, and cakes are made of it, and it is also used medicinally. The gummy juice which abounds in the bark and young fruit is also used medicinally as are the leaves and bark, and the oil is used in making soap in India, and in the manufacture of candles in England. Its price is about 3½ Rs. per maund. The tree flowers in the hot weather, and the flowers are dried in the sun and roasted and eaten by the poorer classes, they are also eaten by animals and birds. I have an allied species from South Canara (banks of rivers), which is called Nánil, in character it is intermediate between this species and elliptica.

Gorindoo, del. Dumphy, Lith.

Bassia longifolia (Linn)

BASSIA ELLIPTICA. (Nat. ord. Sapotaceæ.)

For Gen. Char. see under "Bassia latifolia."

BASSIA ELLIPTICA. (Dalzell.) A very large tree, bark rusty, leaves fascicled at the ends of the branches, somewhat coriaceous dark green above, paler beneath, entire long petioled oblong obovate tapering at the base, terminated in a sudden and blunt acumination, venation indistinct above but marked beneath, peduncles axillary 1-3, 3-4 times longer than the petiole, in fruit erect; calyx 6-parted, in 2 series, 3 outer divisions broader and larger than the 3 inner and more leathery; corol 5-6 cleft contorted in æstivation deciduous, hairy on the inside of the tube at the insertion of the stamens; stamens 12-18, inserted on the inside of the tube shorter than the corol sessile extrorse 2 celled, alternate in 2 rows but the apex of all the anthers reach the same level; ovary tomentose 6 celled, cells 1 ovuled, ovules attached to a basal placenta, style nearly three times as long as the ovary, stigma simple, fruit oblong, size of a large almond 1 seeded by abortion, seed erect, exalbuminous cotyledons fleshy. *Dalz. in Hook. Journ. of Bot.* iii. *p.* 36;—Isonandra acuminata. *Cleghorn in Memorandum on the Pauchotee or Indian gutta tree.*

A gigantic tree, 100 *feet high and up to* 12 *feet in girth, common in all the moist sholas of the Western Ghats of the Madras Presidency, up to* 3,500 *or* 4,000 *feet, and in similar localities on the Bombay Ghats; the timber is hard and not unlike Sál in its grain, and takes a good polish. It is much employed by planters for building purposes, and might be used for furniture. A sort of gutta exudes from the trunk, which is known as pàlà gum or Indian gutta percha. It is not of any value compared with the true gutta percha, but might be used as a birdlime or a cement, and perhaps for encasing telegraph wires. The tree is known by the native names of Pàlà and Pauchotee.*

Govindoo, del.

Dumphy, Lith.

Bassia elliptica (Dalz.) = Dichopsis do
Fl. Brit. Ind. 3. 542

ACROCARPUS FRAXINIFOLIUS. (Nat. ord. Leguminosæ ; Sub-ord. Cæsalpinieæ ; Tribe Eucæsalpinieæ.)

ACROCARPUS. (Wight.) *Gen. Pl.* 1, *p.* 568.—Calyx tube campanulate, lobes 5 short lanceolate, petals 5 narrow subequal subcoriaceous, subimbricate, inserted on to the mouth of the calyx and alternate with its shorter lobes ; stamens 5 free alternate with the petals, filaments broad at the base subulate elongate, anthers oblong linear versatile, cells dehiscing longitudinally ; ovary stipitate, stipe free, many ovuled, style short inflexed, stigma small terminal, legume unknown. An unarmed tree, leaves very large bipinnate, leaflets ovate acuminate herbaceous, racemes axillary solitary or 2-3 at the apex of the branches.—*Wight's Icones Pl.* 254.

ACROCARPUS FRAXINIFOLIUS. (Wight.) An immense deciduous tree, often with very large buttresses, bark light grey colored, young parts aureo-pubescent, leaves glabrous bipinnate, pinnæ 3 pairs with a terminal pinnæ, leaflets equally pinnate 4-6 opposite pair ovate acuminate herbaceous 3-3½ inches long by 1½ broad, racemes many flowered, flowers dull greenish red, calyx and corol minutely aureo-pubescent on the outside.

One of the largest and loftiest trees in our Presidency, generally of very straight growth, with large buttresses at the base. It is very general about the western forests, as I have observed it on the Tinnevelly and Travancore Hills, on the Anamallays, Nilgiris, Wynad, and in Coorg and South Canara. It ascends from the plains up to nearly 4,000 *feet. I have measured a tree* 27 *feet in girth above the buttresses : the flowers appear in December or January with the young leaves, or when the tree is quite destitute of foliage, but I have never yet been able to procure the legume or seed. The timber is flesh colored and shrinks in seasoning ; it is light and much resembles that of the Cedrela toona, and has a cedelaceous smell ; it is much used by the planters at Coonoor and in the Wynad for building purposes, furniture, &c., and in Coorg it is largely used for shingles. It is known to planters by the names of shingle tree, pink cedar, and red cedar, and is called Mallay kone in Tinnevelly, and Kilingi by the Burghers on the Nilgiris ; it is of rapid growth, and well worthy of cultivation by the Forest Department.*

Govindoo del.

Dumphy, Lith.

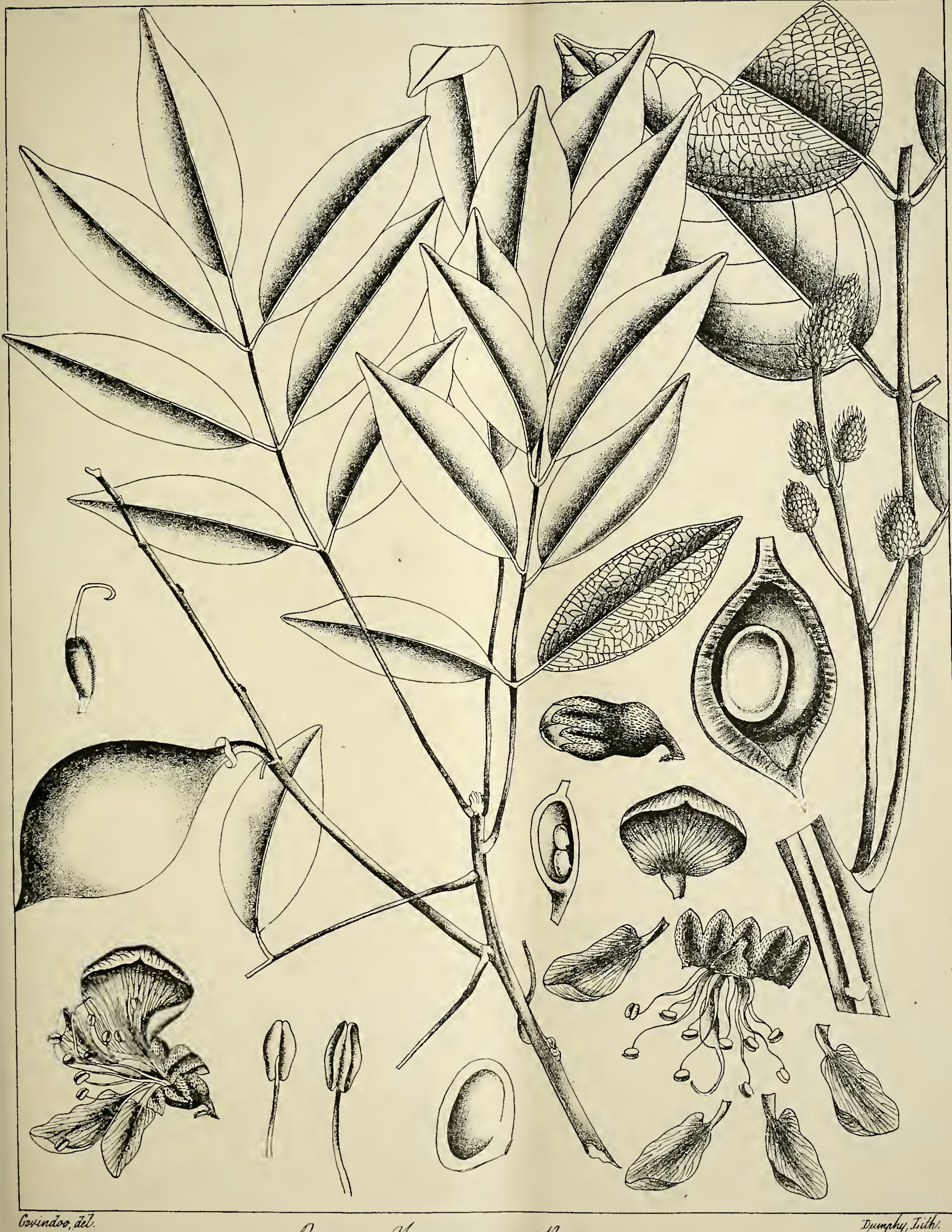
Acrocarpus fraxinifolius (Wight.)

ORMOSIA TRAVANCORICA. (Nat. ord. Leguminosæ ; Sub-ord. Papilionaceæ ; Tribe Sophoreæ.)

ORMOSIA. (Jacks.) *Gen. Pl.* 1, *p.* 556.—Calyx campanulate 5 cleft, or the 2 upper lobes often united into one, standard broad, keel petals not longer free, stamens free, often very unequal, and one sometimes without any anther, ovary sessile or nearly so, with two or few ovules, style rolled inwards at the top with a lateral stigma, pod flattened 2-4 seeded, opening in two thickly coriaceous or woody valves, seeds shining scarlet or scarlet and black, rarely brown-red, the radicle very short ; trees, leaves pinnate, the leaflets usually opposite with a terminal odd one, flowers in terminal panicles, or rarely in simple racemes in the upper axils.

ORMOSIA TRAVANCORICA. (Bedd.) A tree, young parts fulvo-tomentose, leaves glabrous, 8-14 inches long by 4-7 broad, leaflets about 5-6 pairs with a terminal one oblong to elliptic with acute or obtuse point at the apex 2-6 inches long by ¾ to 2 inches broad, petioles ¼ to ½ an inch long, panicles in the upper axils shorter than the leaves, fulvo-tomentose as is the calyx and bracteoles, many flowered, flowers very shortly peduncled in pairs along their branches, legume very hard woody, 2-2½ inches long by 1½ broad, 1-2 seeded, seed bright scarlet.

A middling sized tree.—Travancore and South Tinnevelly Hills (up to 3,500 *feet), S. Canara ghats, and probably elsewhere on the Western Ghats of our Presidency. The timber appears to be remarkably good, but at present is almost unknown.*



Govindoo, del. Dunphy, Lith.

Ormosia Travancorica (Bedd:)

ADENANTHERA PAVONINA. Linn. (Nat. ord. Leguminosæ ; Sub-ord. Mimosæ ; Tribe Adenanthereæ.)

ADENANTHERA. (Linn.) *Gen. Pl.* 1, *p.* 589.—GEN. CHAR. Flowers pentamerous shortly pedicelled, calyx campanulate shortly toothed, petals cohering below the middle, or at length free, valvate, stamens 10 free scarcely exserted, anthers of the fertile flowers bearing a shortly stalked deciduous gland, ovary sessile many ovuled, style filiform, stigma small terminal legume linear often incurved or falcate compressed or swollen at the seeds 2 valved, valves entire, generally incurved at length contorted, seeds thick and hard, testa scarlet or two colored. Trees unarmed, leaves bipinnate, leaflets small in many pairs, racemes elongate slender axillary or panicled at the apex of the branches, flowers white or yellowish, hermathrodite or polygamous.

ADENANTHERA PAVONINA. (Linn.) A large tree, trunk erect, bark dark colored, scabrous when old, smooth when young, leaves alternate abruptly bipinnate 1-3 feet long, pinnæ opposite 4-6 pair, 4-12 inches long, leaflets alternate short petioled 4-12 pairs, oval with the margins waved smooth on both sides 1-2 inches long, petioles round smooth, colored, racemes terminal and from the upper axils solitary cylindrical about a span long, flowers numerous, small yellowish fragrant, bracts minute caducous.

This large timber tree is said to be wild in the forests of the Northern Circars and elsewhere, but I have myself never met with it wild. It is very common in a cultivated state, particularly in gardens at Madras, and is abundant in Birmah. The timber, when fresh cut, much resembles the red sanders, and has a pleasant smell ; it is strong, but not stiff, hard, durable, tolerably close and even grained, and takes a good polish. When fresh it is of a beautiful red color with streaks of a darker shade, but afterwards turns purple and resembles rosewood. A cubic foot unseasoned weighs 62 lbs., and when seasoned 56 lbs. ; its specific gravity is ·896, it is used for house building and cabinet making purposes ; it is known to Europeans as the red wood tree, and is called ȧni kundȧmani in Tamil, Bandi guriienda in Teligoo ; Manjari in Malayalim, Thorla goonj in the Bombay Presidency, Madateya in Ceylon, and y-wai gyi in Birmah. The wood yields a red dye used by Brahmins in marking their foreheads. The seeds weigh 4 grains each, and are used as weights by jewellers. A cement is made by beating them up with borax and water, and the pulp is used medicinally. The tree is easily raised from seed, and is of rapid growth, and has been largely planted in some of our plantations.

Govindoo, del.

Dumphy. Lith.

Adenanthera Pavonina (Linn.)

ACACIA ARABICA. Willd. (Nat. ord. Leguminosæ ; Sub-ord. Mimosæ ; Tribe Acacieæ.)

ACACIA. (Willd.) *Gen. Pl.* 1 *p.* 594.—Corol regular, sepals 5-4 or 3 free or united ; petals as many, small valvate in the bud free or united ; stamens indefinite usually very numerous, free or slightly connected at the very base, pod linear or oblong flat or nearly cylindrical, opening in 2 valves or indehiscent ; leaves twice pinnate or in some species (Australian) reduced to a simple dilated petiole, (phylloid.) Flowers usually yellow or white in globular heads or cylindrical spikes often polygamous.

ACACIA ARABICA. (Willd.) Subarboreous, armed, branches terete glabrous, thorns stipulary sometimes long sometimes short or almost wanting, leaves bipinnate, pinnæ about 5 pairs with a gland between the first and last pairs, leaflets 15-20 pairs glabrous; peduncles aggregated axillary or forming a terminal raceme by the abortion of the leaves, heads of flowers globose yellow, corol 5 cleft, stamens numerous distinct ; legumes stalked compressed thickish contracted on both sutures between the seeds. *Willd. Sp.* 4, *p.* 1085 ;—*W. A. Prod. p.* 277 ;—Mimosa Arabica. *Lam.*

This is the well known Babul tree. It is common all over India, and also inhabits Ceylon ; but I have never seen it truly wild in the forests of the peninsula. Dr. Stewart however mentions that it is truly indigenous in Sind. The wood is close grained and tough, of a pale brownish red color. It is used for building purposes, axles and the naves, spokes and felloes of wheels, plough shares, sugar-cane rollers, kneed timbers for ship building, and many other purposes, but should be seasoned in water to exempt it from the attack of insects. It makes excellent charcoal, and is one of our best trees for locomotive fuel. When seasoned it weighs 54 *lbs. the cubic foot, and its specific gravity is* ·864 ; *it is called Babul and Keekar in Hindustanee, Nallà toomà in Teligoo, and Kurroo vaylum in Tamil. The tree delights in black cotton soil, in which it grows very rapidly if irrigated, but it stands drought better than most trees, and will grow, though of course not so rapidly, without water, and in almost any soil. It is easily raised from seed, but rats often destroy the roots of the seedlings. The tree is sometimes raised from cuttings ; it will not answer well at any elevation over* 3,000 *or* 3,500 *feet. It is not often seen of any great size, but trees of* 9 *and* 10 *feet girth are sometimes met with. It is being extensively raised in all our fuel plantations in the plains. A transparent gum is procured from incisions in the bark, which is used as a substitute for the true Gum Arabic ; the bark is used medicinally, and also as a brown dye, and to a great extent for tanning purposes, and a decoction of it makes a good substitute for soap. The pod and leaves are good fodder for sheep, goats and cattle.*

+ The true Gum Arabic tree is of a different species & is the Acacia Senegal, Willd. 4. 1077. & W. A. Prod. 1. 295.— Flowers in spikes & not in round heads, like A. catechu, Willd. 4. 1079 — W. A. Prod. 1. 293.—

Govindoo, del. Dumphy, Lith.

Acacia Arabica (Willd.)

ACACIA LEUCOPHLÆA. Willd. (Nat. ord. Leguminosæ ; Sub-ord. Mimosæ ; Tribe Acacieæ.)

For Gen. Char. see under Acacia Arabica.

ACACIA LEUCOPHLÆA. (Willd.) A good sized tree, armed with stipulary thorns, leaves bipinnate, pinnæ 7-12 pairs with a gland below the first and between some of the last pairs, leaflets 16-30 pairs oblong linear pubescent or nearly glabrous, panicles large terminal, or from the upper axils, branches and peduncles shortly tomentose, heads of flowers globose shortly peduncled, corol 5 cleft, stamens numerous distinct, legume narrow linear long curved shortly tomentose. *Willd. Sp.* 4, *p.* 1083 ;—*W. A. Prod.* 277 ;—Mimosa leucophlæa. *Roxb. Fl. Ind.* ii. *p.* 558.

This white barked Acacia is readily distinguished by its panicled globular inflorescense, and stipulary thorns; it is a common tree throughout the three Presidencies and in Ceylon. The timber is hard and strong, much like Babul, but closer grained and of a deeper color ; it is used for the same purposes. A cubic foot unseasoned weighs 62 lbs., and 55 lbs. when seasoned ; its specific gravity is ·880. It makes excellent fuel for locomotive purposes. It is called Sufaed Keekar in Hindustanee, Velvaylum in Tamil, Tellà tumà in Teligoo, Hewar in Bombay, and Katu andara in Ceylon. The bark is largely used in the distillation of arrack from Jagiri ; it also yields a fibre which is tough and strong, and used for fishing nets and cordage.

(1) See Ainslie 1st Ed. 263 = Mimosa [illegible] A. pinnata, Willd. — [illegible] Ind. 2 [illegible] W.A.P. 277 — my note, & [illegible] note of 12th Dec 1866.

Govindoo, del. Dumphy, Lith.

Acacia leucophlœa (Willd.)

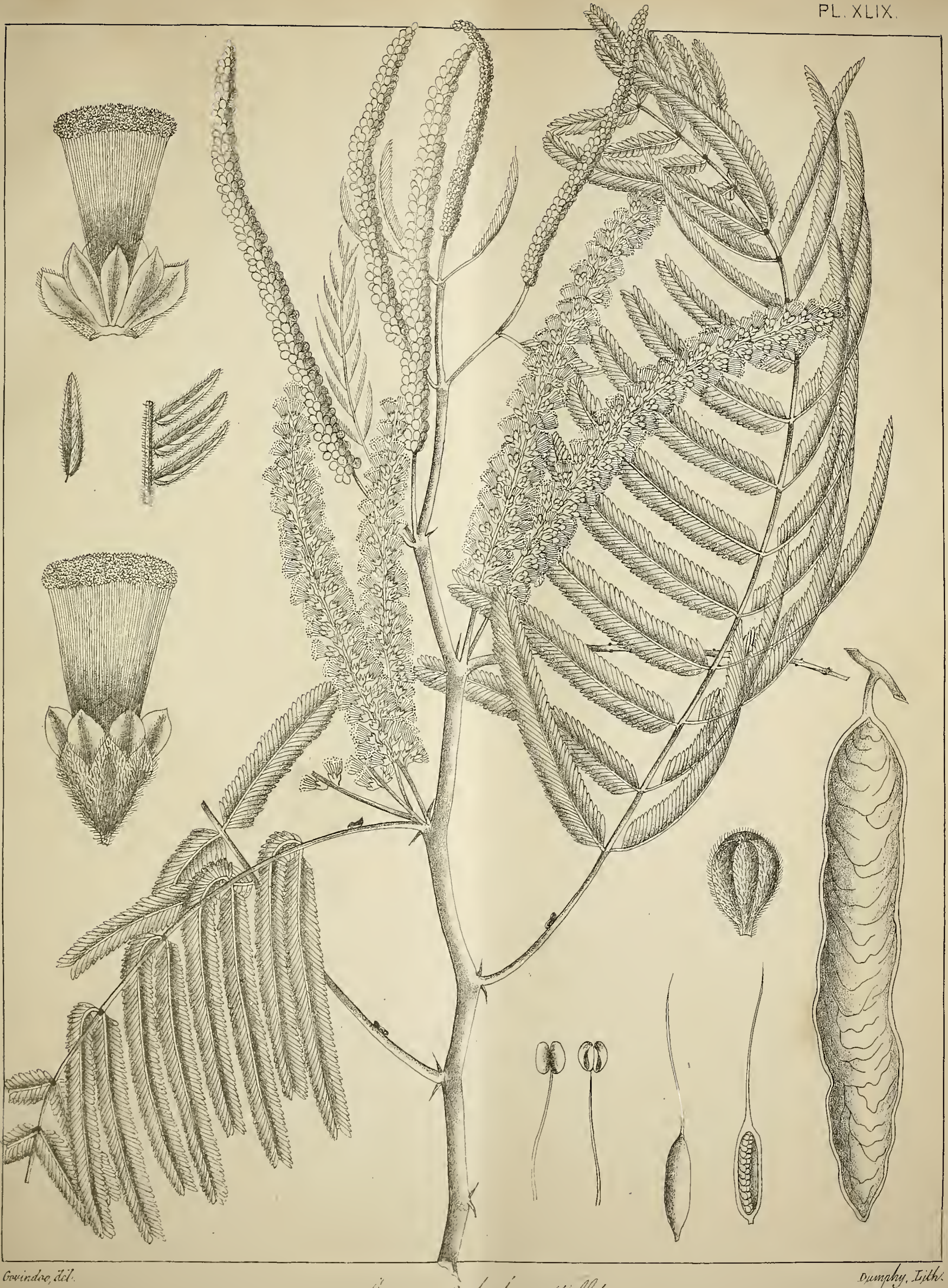
ACACIA CATECHU. (Nat. ord. Leguminosæ, Sub-ord. Mimoseæ.)

For Gen. Char. see under "Acacia Arabica."

ACACIA CATECHU. (Willd.) Arboreous, branches armed with stipulary thorns or sometimes unarmed, young shoots petioles and peduncles more or less pubescent, leaves bipinnated, pinnæ 10-30 pair, leaflets 30-50 pair puberulous, petiole sometimes armed on the under side with a row of prickles, with one large gland below the lowest pair of pinnæ and between the 1·7 extreme pairs, spikes axillary 1-4 shorter than the leaves; flowers numerous, petals united, stamens distinct, numerous, legume flat thin straight linear glabrous 4-8 seeded. *Willd. Sp.* iv. *p.* 1079;—*W. A. Prod. p.* 272. A, polyacantha, *Willd. l. c.* A. Wallichiana, *D. C. Prod.* ii. 458. Mimosa catechuoides. *Roxb. Fl. Ind.* ii. p. 562. Mimosa Catechu, *Roxb. Fl. Ind.* ii. *p.* 563.

A middling sized tree, with a dark brown bark, common all over India, Birmah and Ceylon, ascending to an elevation of 3,000 *or rarely* 4,000 *feet, it is very closely allied to A. Sandra, but differs in being softly puberulous and in its more numerous pinnæ, and leaflets, and it generally has a gland between the* 6-7 *extreme pair of pinnæ, whereas in Sandra only the* 1·3 *upper pair have a gland between them. Acacia Suma of Roxburgh is also closely allied, if not identical with this species. It is called in Hindoostanee Khaira; and Wothalay in Tamil. The substance of Catechu (formerly called terra japonica) is obtained from the wood of this tree and of the Acacia Sandra, chips of the heartwood are boiled in earthen pots, the clear liquor is strained off; and when of sufficient consistence, it is poured into clay moulds; the extract is used in dyeing and also medicinally as an astringent, and externally as an ointment for itch, syphilis and burns. Very good catechu is obtained from Birmah, and a considerable quantity is made in South Canara, chiefly from A. Sandra, and large quantities are exported from Bengal. One pound of Catechu has been found to be equal to* 7 *or* 8 *lbs. of Oak bark for tanning purposes. The timber is dark colored; hard and heavy; unseasoned it weighs* 85 *to* 90 *lbs. the cubic foot, and nearly* 80 *lbs. when seasoned, and has a specific gravity of* 1·232; *it is close grained and durable, works smoothly and stands a good polish, and though somewhat brittle is much valued where strength is required, it is used for ploughs, pestles, &c., and in house building and the construction of carts; it is not attacked by white ants. The tree flowers in July, and the seeds ripen in the cold weather. In Ceylon it is called Rat-kihiri, and an infusion of the wood is much esteemed by the natives as a purifier of the blood, and drinking cups are made of it.*

A. Suma ~~Roxb~~ Kurz Fl. Brit. India 2. p. 294



Govindoo, del. Dumphy, Lith.

Acacia Catechu (Willd.)

ACACIA SANDRA. (Nat. ord. Leguminosæ, Sub-order Mimoseæ.)

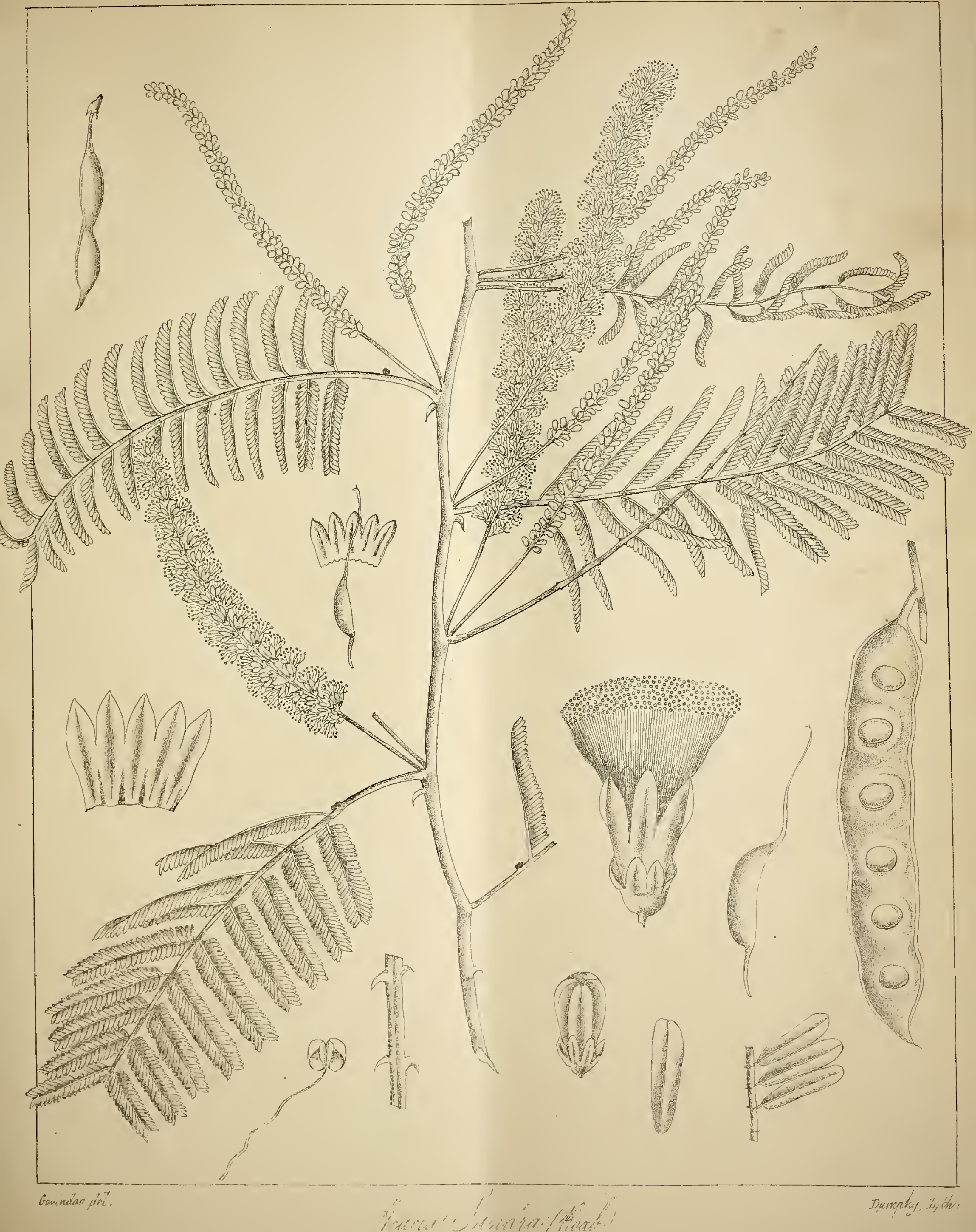
For Gen. Char. see under "Acacia Arabica."

ACACIA SANDRA. (Roxb.) A tree 20-30 feet high, bark dark brown, everywhere glabrous, branches armed with compressed decurrent recurved stipulary prickles, sometimes entirely unarmed, leaves bipinnate, pinnæ 15-20 pairs with a gland on the petiole below the lowest pair and between the extreme 1-3 pairs, leaflets 20-40 pair small linear obtuse spikes 1-3 together axillary peduncled shorter than the leaves, cylindrical, many flowered, corol 5 cleft, stamens very numerous distinct, legumes flat thin lanceolate few seeded; suture straight or occasionally emarginate between the seeds. *W. A. Prod.* 273. Mimosa sandra. *Roxb. Fl. Ind.* ii. 562.

A middling sized tree common throughout the Madras Presidency, Bombay and Mysore, it is very nearly allied to A. catechu, and yields exactly the same extract from its wood, it is called Sandra and Nalla Sandra in Teligoo, Karangalli and bàgà in Tamil. The wood is tolerably close grained and durable; of a dark red color, veined with a darker shade of streaks, it is very heavy, weighing about 96 *or* 98 *lbs. unseasoned, and* 80 *lbs. when seasoned; its specific gravity is* 1·296, *it is used for building purposes (beams and posts), ploughs, mortars and pestles, &c., and is a good wood for piles and sleepers.*

Most of the Catechu collected in the Madras Presidency comes from this tree. Haw. p. 95 Fl. Brit. Ind. 2. 295

Ceylon ... — Karangalli, in Jaffna.



Govindoo del.

Dumphy, lith.

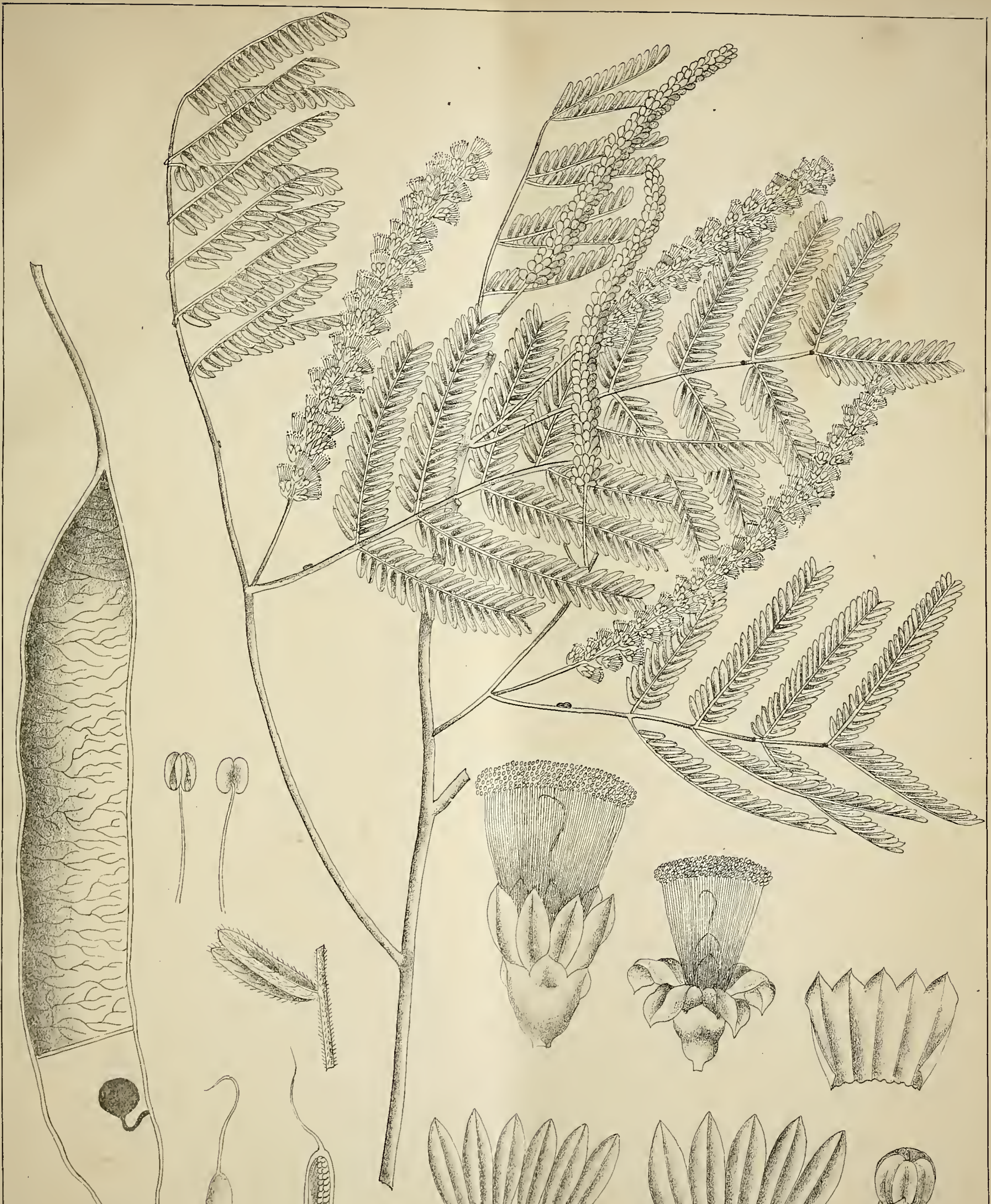
Acacia Sundra (Roxb.)

ACACIA FERRUGINEA (Nat. ord. Leguminosæ, Sub-order Mimoseæ.)

For Gen. Char. see under "A. Arabica."

ACACIA FERRUGINEA. (Roxb.) A middling sized tree, 20-30 feet high, bark deeply cracked, dark rusty colored; armed with stipulary conical thorns, occasionally unarmed, branches diffuse, leaves glabrous bipinnate, pinnæ 3-6 pair with one gland on the petiole and one between each of the 1-2 extreme pairs, leaflets 10-20 pair oblong linear obtuse, spikes axillary, usually in pairs cylindrical many flowered, corol 5 cleft, stamens numerous free or slightly united at the very base, legumes flat lanceolate obtuse hard 2-6 seeded. *D. C. prod.* ii. *p.* 468. *W. A. Prod. p.* 273. Mimosa ferruginea. *Roxb. Fl. Ind.* ii. 561.

This tree much resembles Acacia Catechu and Sandra and differs chiefly in the smaller number of pinnæ; it is common in the jungles throughout the Madras Presidency, in Mysore and Birmah, it is called Ansandra and Woonee in Teligoo, Vel Veylum in Tamil, and Sitnet in Birmah; it flowers in April and May, the bark is very astringent, and is used by the natives in the distillation of arrack from jaggery in the same way as the bark of A. leucophlœa. The wood is of a reddish brown, streaked with a darker hue, heavy and durable, and does not warp or crack, the grain rather coarse and even, works well and gives a smooth surface; it is used in building and in the construction of carts, ploughs, &c.; it weighs 60 *lbs. per cubic foot when seasoned and* 65-70 *lbs. unseasoned, and has a specific gravity of* ·960.



Govindoo, del. Dumphy, Lith:

Acacia ferruginea (Roxb:)

ACACIA FARNESIANA. (Nat. ord. Leguminosæ, Sub-order Mimoseæ.)

For Gen. Char. see under "Acacia Arabica."

Acacia Farnesiana. (Willd.) A small tree much branched glabrous or slightly pubescent on the petioles and peduncles; leaves bipinnate, pinnæ 4-8 pair with a gland between the lower and often between the uppermost pair, leaflets 10-20 pair linear about 2 lines long, stipules converted into slender straight thorns very variable in length, the tree otherwise unarmed, peduncles usually 2 or 3 together in the older axils, each bearing a single globular head of yellow sweet scented flowers, polygamous bisexual and male, calyx 5-toothed, corol tubular gamosepalous 5 (rarely 6) toothed, stamens very numerous distinct, legume thick, irregularly cylindrical or fusiform turgid, indehiscent filled with a pithy substance in the midst of which lie a double row of seed.—***Willd.*** *Sp.* iv. *p.* 1083, Mimosa Farnesiana, *Roxb. Fl. Ind.* ii. *p.* 557. Vachellia Farnesiana, *W. A. Prod. p.* 272.

Apparently indigenous all over the Madras Presidency, Mysore, Bombay, Bengal, but supposed to be of American origin, and to have been naturalized and run wild, it is also found in Africa and N. Australia, it is called Kusturi and Oddà sàle in Teligoo, Vedda va'la in Tamil, Jalli in Canarese and Iri babul in Bombay. The wood is very hard and tough, and is used for ship knees, tent pegs, ploughs, &c. &c. A considerable quantity of gum exudes from the trunk, and a delicious perfume is made from the sweet scented yellow flowers; it makes a good fence if properly pruned, and the tree will grow up to an elevation of 5000 *feet.*

Govindoo, del.

Acacia Farnesiana (Willd.)

Dumphy, Lith.

ALBIZZIA LEBBEK. (Nat. ord. Leguminosæ, Sub-order Mimoseæ, Tribe Ingeæ.)

ALBIZZIA. (Durazzini.) *Gen. Pl.* 1. *p.* 596.—GEN. CHAR. Flowers pentamerous hermathrodite or rarely polgamous, calyx campanulate or tubular toothed or shortly lobate, corol infundibuliform, petals connate to beyond the middle, valvate stamens indefinite, usually numerous and long, united in a tube at the base, anthers small, legume broadly linear or oblong flat, thin indehiscent or opening in 2 valves, continuous within, valves not elastic or contorted, seed ovate or orbicular compressed, funicle filiform. Unarmed trees or shrubs, leaves bipinnate with a gland on the petiole below the pinnæ and others between some or all the pinnæ and leaflets, flowers in globular heads or rarely cylindrical spikes usually hermathrodite, the stamens usually white or pink, rarely yellow, much longer than in Acacia. This genus differs from Acacia chiefly in the stamens being united into a tube instead of being free or nearly free at the base, and also in its much longer stamens.

ALBIZZIA LEBBEK. (Benth.) A large tree, trunk generally short, bark ash-colored, young branches flexuose glabrous, leaves about the ends of the branchlets, bipinnate, about a span long, pinnæ 1-4 pair (sometimes the lower pairs are somewhat alternate) with a large gland a little below the base of the petiole, leaflets opposite, 4-9 pair oval obtuse or retuse unequal glabrous, about an inch and a half long and three-fourths broad, with often 1-2 small glands near the base of the partial petioles, and small ones between the leaflets, but their presence and number is always uncertain, except those near the base; peduncles axillary 1-4 together, each bearing a globular head of shortly pedicelled, white fragrant flowers, calyx long tubular, petals 5 united to beyond the calyx, stamens very long numerous monadelphous, legume leafy, thin flat broadly linear from 6 to 12 inches long by 1 to 2 broad, remotely 8-10 seeded indehiscent. *Benth. in Hook. Journ. Bot.* iii. 87. Acacia Lebbek, *Willd, D. C. Prod.* ii. 466. Acacia speciosa, *Willd, D. C. Prod.* ii. 467. Mimosa serissa, *Roxb. Fl. Ind.* ii. 544. Albizzia latifolia, *Boivin. Encyc.*

This tree is common in every part of India, and in Birmah and Ceylon; it is better known under the name of Acacia or Albizzia speciosa, and was long supposed to be distinct as a species from Lebbek, it grows to about 50 *feet high, with a trunk up to* 8 *and rarely* 12 *feet in girth; it flowers in the hot weather, and the seeds ripen in the rains. It is generally nearly destitute of leaves in the cold season, and it has an extensive but thin head, it grows in almost all soils and situations. It is called Siris in Hindustanee (and is generally known by this name to Europeans), Dirasan and Pedda duchirram in Teligoo, Vàghe and Kàt Vàghe in Tamil, and Sit in Birmah. When seasoned the timber weighs* 50 *lbs. the cubic foot and has a specific gravity of* ·800, *it is hard and durable, of a light reddish brown color, with darker veins, and it is not liable to warp or crack. It is used for a great variety of purposes, naves of wheels, pestles and mortars, picture frames, furniture, parts of boats, &c., and the heartwood makes good charcoal. A gum very similar to Gum Arabic exudes from the trunk, and the leaves and twigs are good fodder, the seed is officinal, it is easily raised from seed, and is of very rapid growth, and grows well from cuttings, poles stuck in the ground rooting readily, its branches are brittle and suffer in localities exposed to the wind.*

Gavindoo, del.

Albizzia Lebbek (Benth.)

Dumphy, Lith.

ALBIZZIA ODORATISSIMA. (Nat. ord. Leguminosæ, Sub-order Mimoseæ, Tribe Ingeæ.)

For Gen Char. see under "Albizzia Lebbek."

ALBIZZIA ODORATISSIMA. (Willd.) A large tree, unarmed, branches glabrous, leaves bipinnate, pinnæ 3-4 pair with a gland on the petiole and between the uppermost pair: leaflets 10-14 pair, narrow oval obtuse oblique glabrous pale on the under side: panicle terminal and axillary, the ultimate divisions cymose or somewhat umbellate, flowers in small globose heads, corol tubular 4 cleft to the middle, stamens monadelphous, legume flat broadly linear, thin, thick-margined, about 10 seeded. *Willd, Sp.* iv. *p.* 1063. Mimosa odoratissima, *Roxb. Fl. Ind.* ii. 546. Acacia odoratissima, *W. A. Prod. p.* 275. A. lomatocarpa, *D. C. Prod.* ii. 467. Mimosa marginata, *Lam.*

This is one of our most valuable jungle timbers; it is abundant throughout the Madras Presidency, in Mysore, Bombay, Bengal, Birmah, and Ceylon, its Tamil name is Kar Vàghe; and in Teligoo it is called Shindagu and Telsu, and in Ceylon Hoore mara; it does not ascend the mountains much above 3000 *feet. The wood is hard, coarse grained, equal to Teak in strength, of a dark reddish brown or brown color, and takes a good polish; it is much used for building and cabinet purposes, naves and felloes of wheels, &c., its specific gravity is* ·736 *and when seasoned it weighs* 46 *lb. the cubic foot. The tree flowers in the hot season; the juice of the bark is used medicinally by the natives.*

Govindoo, del.

Dunphy, Lith:

Albizzia odoratissima (Willd:)

ALBIZZIA STIPULATA, (Nat. ord. Leguminosæ, Sub-ord. Mimoseæ, Tribe Ingeæ.)

For Gen. Char. see under "Albizzia Lebbek."

ALBIZZIA STIPULATA. (D. C.) A very large tree, unarmed, young shoots irregularly angled, and the petioles tomentose, leaves bipinnate, pinnæ 6-20 pair with a gland on the petiole and between each of most of the upper pairs; leaflets 20-30 pair on each, pinna, oblongo-linear falcate acute 3-5 lines long, the midrib close to the inner edge, stipules membranous semicordate acuminate, sometimes nearly an inch long, very conspicuous on the young branches, but soon deciduous, peduncles usually about ½ inch long, clustered along the branches of a terminal panicle, bracteas large, heads consisting of 10 to 20 flowers about 3 lines long, corol tubular pubescent 5 cleft, stamens about 20, above 1 inch long monadelphous at the base, calyx much shorter than the corol pubescent, legume 3-5 inches long, 9-10 lines broad, flat thin linear lanceolate glabrous 6-12 seeded. *D. C. Prod.* ii. 469. Acacia stipulata. *W. A. Prod.* 274. Mimosa stipulata. *Roxb. Hort. Bengh.* Mimosa stipulacea. *Roxb. Fl. Ind.* ii. *page.* 549.

This very handsome tree is not uncommon throughout the Madras Presidency, Mysore, Bombay, Bengal, Birmah and Ceylon; it ascends the mountains to nearly 6,000 *feet, but is also common in the plains, particularly in S. Canara, where its timber is much in use. It is called Konda chiragu in Teligoo, and sometimes Chindagu; Kal bàge in S. Canara, Seet and Boomayza in Birmah, and Cubal mara in Ceylon. The timber is strong, compact, stiff, coarse grained and fibrous, of a light reddish brown color, and is used for building purposes, naves of wheels, &c., its specific gravity is* ·880, *and it weighs* 55 *lbs. the cubic foot when seasoned, and* 63 *to* 65 *unseasoned; it attains a very large size, and must be a very rapid grower, as Dr. Roxburgh mentions one that he planted which measured* 48½ *inches in circumference at* 4 *feet from the ground, when* 7 *years old, and Dr. Stewart mentions one that measured* 7 *feet in girth when* 17 *years of age in the Saharunpore garden.*

Govindoo, del.

Dumphy, Lith.

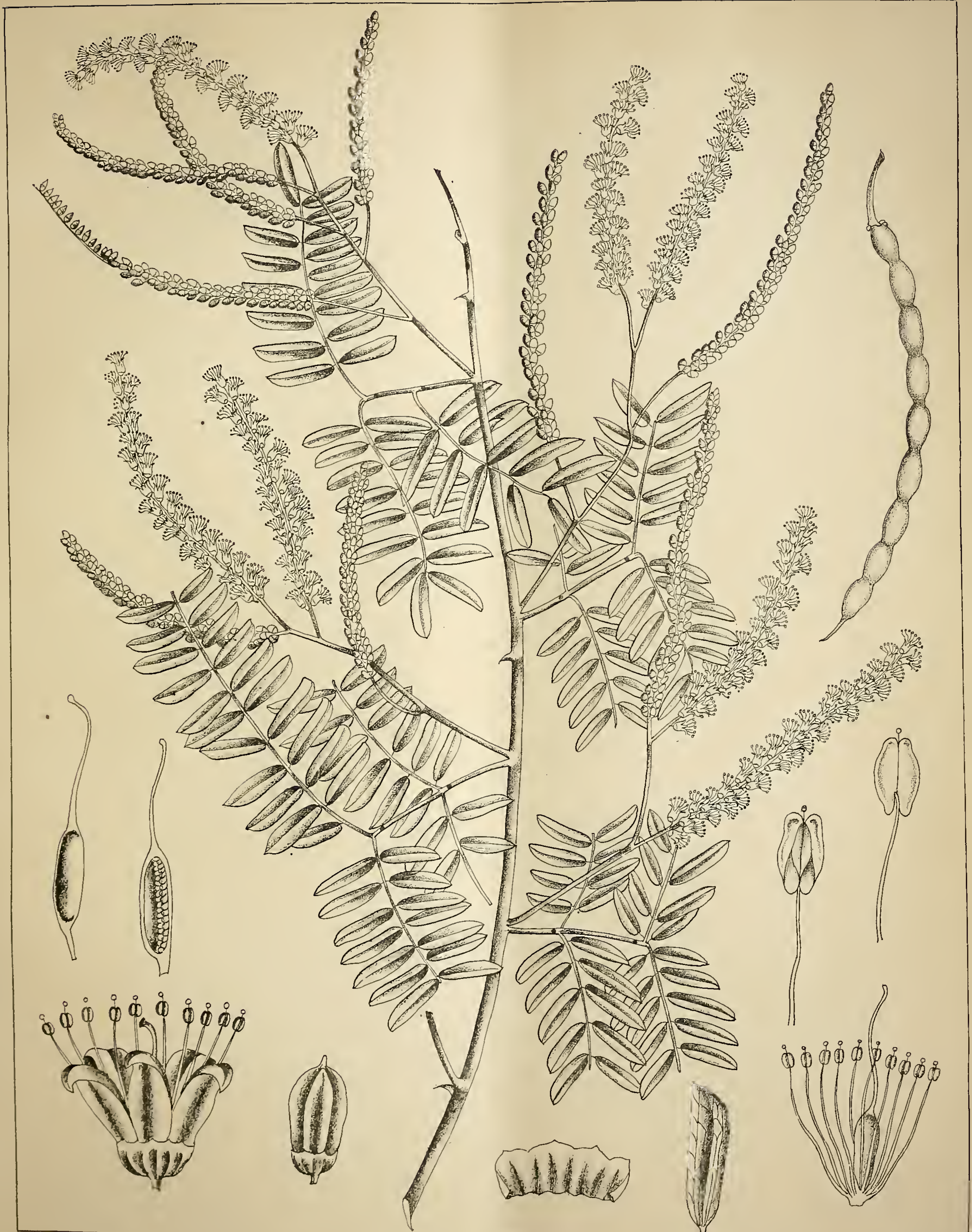
Albizzia stipulata (D.C.)

PROSOPIS SPICIGERA (Nat. ord. Leguminosæ, Sub-ord. Mimoseæ, Tribe Adananthereæ.)

PROSOPIS. (Linn.) *Gen. Pl.* 1, 591.—GEN. CHAR. Flowers polygamous bisexual and male, 5-merous, sessile, calyx campanulate shortly toothed, petals connate below the middle or at length free valvate, stamens 10, free shortly exserted, anthers gland-tipped or rarely without glands, ovary sessile or stipitate many ovuled, style filiform, stigma terminal small, legume continuous filled with pulp linear cylindrical falcate or contorted slightly compressed torulose indehiscent at length falling to pieces ; seed ovate compressed. Trees or shrubs armed or unarmed, leaves bipinnate or occasionally simply pinnate, flowers spiked, rarely in globular heads.

PROSOPIS SPICIGERA. (Linn.) A tree armed with scattered prickles, or occasionally unarmed, trunk tolerably erect, bark deeply cracked, of a dirty ash color, branches irregular, very numerous, forming a shady head; leaves 2-4 inches long, alternate generally bipinnate, with 1-2 rarely 4 opposite pair of pinnæ and a gland between each pair, rarely simply pinnate, leaflets 7-10 pair opposite oblong linear obtuse entire glabrous, about ½ an inch long and ⅙ broad, stipules none, spikes axillary several together elongated filiform nearly erect, anthers tipped with a deciduous gland, bracts minute one flowered caducous, flowers small yellow, legume cylindric filled with mealy pulp. *W. A. Prod. p.* 271. *Linn. Mant. p.* 68. Adenanthera aculeata, *Roxb. Fl. Ind.* ii. p. 371.

This tree is tolerably common throughout the Madras Presidency ; and in Mysore, Bombay, and Bengal, but does not occur in Ceylon or in Birmah ; it is frequently found of large size in the denser forests, and rarely attains to a girth of about 9 *feet. It is called Perumbe and Vunne in Tamil, Shumee in Bengal, Sounder in the Bombay Presidency, and Sumree in Guzerat ; its timber weighs about* 100 *lbs. unseasoned and* 72 *lbs., seasoned, and has a specific gravity of* 1·152. *It is dark red in color, straight and close grained, hard and durable, and superior to Teak in strength, and is much used for building purposes and cart wheels, and occasionally for furniture, and makes excellent fuel. It is of very slow growth ; it flowers in the hot weather ; the mealy sweet substance in the pod is eaten by the natives, and a gum exudes from the tree.*



Cavindos, del. Dumphy, lith.

Prosopis spicigera (Linn.)

SARACA INDICA. (Nat. ord. Leguminosæ, Sub-ord. Cæsalpinieæ, Tribe Amhersteæ.)

SARACA. (Linn.) *Gen. Pl.* 1. 583.—GEN. CHAR. Calyx furnished at the base with 2 opposite bracteoles, tube lined with a disk elongate, segments 4-5 petaloid, ovate subequal imbricate, petals none, stamens 3-9 rising from the crenulated ring-like apex of the disk, free, filaments elongate, anthers oblong, cells dehiscing longitudinally : ovary stipitate, the stalk below cohering to one side of the calyx tube free above, style filiform, stigma terminal obtuse, ovules 8-12, legume oblong or elongate compressed or a little turgid 2 valved 4-8 seeded, seed exarillate, albumen none. Trees unarmed leaves abruptly pinnate, leaflets few paired, stipules intra-foliaceous caducous, racemes panicled. (Jonesia. *Roxb.*)

SARACA INDICA. (Linn) A middling sized ramous tree, trunk erect though not very straight, bark dark brown, pretty smooth, branches numerous, spreading in every direction and forming an elegant and shady head, leaves alternate abruptly pinnate, sessile 10-15 inches long, when young pendulous and colored, leaflets opposite 4-6 pair, lanceolate 4-6 inches long by 1-1½ broad, smooth shining and firm in texture with the margins often a little waved, stipules intra-foliaceous, caducous, panicles short axillary and terminal nearly globular, large and crowded with flowers, bracts small cordate, flowers pretty large, when first expanding of a bright orange color, changing to red, fragrant at night, calyx funnel shaped, furnished at the base with 2 nearly opposite colored cordate bracts, tube of the calyx slightly incurved firm and fleshy, lined with a disk, divisions of the calyx 4 rarely 5, spreading petaloid ovate subequal, imbricate, one third the length of the tube, corol none, stamens 7, rarely 8-9 rising from the crenulated ring-like apex of the disk, filaments equal free, 3 or 4 times longer than the divisions of the calyx, ovary stipitate, the stalk below cohering to one side of the calyx tube, style nearly as long as the stamens, stigma single, legume scimitar shaped turgid on the outside, reticulated 6 to 10 inches long and about 2 broad, seed 4-8 smooth. *Linn. Mant. p.* 98. *Rheed. Mal.* v. *p.* 59. Jonesia Asoca, *Roxb. Fl. Ind.* ii. p. 218. Saraca arborescens, *Burm. Ind. p.* 85. *t.* 25. *f.* 2. Saraca pinnata, *Willd. Sp.* ii. *p.* 287.

This exceedingly handsome tree is indigenous up to an elevation of 3,000 *feet in the forests of S. Canara, the Concan, Mysore, Gumsur, Cuttack, Eastern Bengal and Ceylon, and is cultivated in gardens at Madras and all over India ; its bright orange flowers and pendulous colored young leaves make it very showy when in flower. It is called Asok or Asokà in Bengal, Ashunkar in S. Canara, Jassoondie in the Concan, and Deya-ratmal in Ceylon ; it flowers during the hot season, and its seed ripens in the rains. I know nothing of its timber, and am not aware that it has ever been tried ; as a shade yielding ornamental tree it scarcely has an equal ; it is much better known under Roxburgh's name of Jonesia than under the old Linnean name of Saraca, but the latter has priority and is now adopted.*

Govindoo, del.

Dunphy, Lith.

Saraca Indica (Linn.)

BERRYA AMMONILLA. (Nat. ord. Tiliaceæ.)

BERRYA. (Roxb.) *Gen. Pl.* 1. *p.* 232.—GEN. CHAR. Calyx campanulate irregularly 3-5 cleft, petals 5, naked at the base, stamens numerous free inserted on to the torus, which is not elevated, stamiuodia none, anthers subglobose, cells at length confluent, ovary 3 lobed, 3 celled cells 4 ovuled, style subulate, stigma 3 lobed, capsule subglobose 6 winged, 3 celled 3 valved loculicidal, each valve furnished with 2 large oblong membranaceous reticulated horizontal villous wings, seeds 1-4 in each cell densely covered with short rigid hairs, albumen fleshy, radicle superior, cotyledons foliaceous. A tree, leaves alternate entire 5-7 nerved, panicles terminal and axillary, flowers numerous, white. (Espera, *Willd.* Hexagonotheca, *Turcz.*)

BERRYA AMMONILLA. (Roxb.) Trunk tolerably straight, with smooth light brown bark and an extensive dense shady head, leaves alternate petioled, cordate sometimes slightly scoloped 5-7 nerved acute smooth on both sides, 4-8 inches long, petioles rather shorter than the leaves, slender round smooth and often colored, stipules ensiform, panicles terminal and axillary large ramose bearing numerous elegant middle-sized white flowers; calyx 1 leafed downy outside, splitting irregularly into 3-4-5 segments permanent, petals 5 spreading linear oblong double the length of the calyx or more, filaments numerous half the length of the petals, anthers incumbent 2 lobed, ovary superior hairy ovate 3 lobed 3 celled, with 6-8 ovules in each, attached in 2 vertical rows to the axis, style short stigma 3 -cleft capsule 6-winged, &c., as in the genus. *Roxb. Fl. Ind.* ii. 639.

This is the tree which yields the well known Trincomalee wood; it is indigenous in Ceylon, where it is called Halmililla (hence Roxburgh's specific name Ammonilla), and is not uncommon in the Madras Presidency in a cultivated state, though I have never met with it wild; its timber is strong, tolerably light, flexible and straight grained easily worked, of a pale red color fading to light brown, and very superior for direct cohesive strength; it is used for shafts, spokes of wheels and framing of carriages, handles and helves, and answers all the purposes of Ash in England; its specific gravity is ·800, *unseasoned it weighs* 58 *to* 60 *lbs. the cubic foot and* 50 *lbs. seasoned, it is largely imported into Madras from Ceylon in logs from* 18 *to* 25 *feet long and* 2½ *to* 5 *feet in girth.*

Govindoo, del.

Dumphy, Lith.

Berrya Ammonilla (Roxb.)

PYGEUM CEYLANICUM. (Nat. ord. Rosaceæ, Tribe Pruneæ.)

PYGEUM. (Gærtn.) *Gen. Pl.* 1. *p.* 610.—GEN CHAR. Flowers sometimes polygamo-diœcious, calyx deciduous, tube broadly campanulate or spreading, teeth 5-6 (rarely more or none) small, petals as many, usually resembling the calyx-teeth inserted into the jaws of the tube of the calyx, stamens 12-20 inserted with the petals, filaments filiform, anthers didymous, ovary superior sessile of a single carpel attenuated into a terminal style, stigma peltate, ovaries 2, pendulous, fruit dry coriaceous or drupaceous usually as broad as or broader than long with a smooth kernel, containing a single seed, cotyledons very thick, radicle superior. Trees, leaves alternate simple entire coriaceous, stipules small very deciduous, racemes axillary or lateral solitary or fascicled, flowers small. (Polydontià, *Blume Bijd.* 1104. Polystorthia, *Bl. Fl. Jav. Præf.* VIII.)

PYGEUM CEYLANICUM. (Gærtn.) A gigantic tree, leaves from elliptic, very obtuse at both ends, to sub-orbicular glabrous, when dry of a rusty brown beneath, 4-7 inches long by 2-3 broad, petioles ½ inch long, racemes shorter than the leaves, axillary solitary, covered with short adpressed hairs, flowers small, petals 5 reflexed, externally hairy round the margin, drupe shortly tomentose at length subglabrous.—*Gært. Frut.* i. 218. *t.* 46. Polyodontia? Walkerii. *Wight Ill.* i. 203. Pygeum acuminatum, *Coleb. Linn. Trans.* XII. 360. *t.* 18.

This tree is common on the Anamallays, and I have also met with it on the Shevaroys and on the Pulneys and Tinnevelly ranges; in the Anamallay sholas at an elevation of 4,000 *feet it grows to an immense size and occasionally has very large buttresses, I have seen trees much over* 20 *feet in girth with an enormous spreading head. Nothing is known of its timber in this Presidency, it is reddish colored and apparently adapted for cabinet purposes, and the tree has no native name ; it is also found in Ceylon, where it is called Galmora; the seed when bruised has a strong smell of prussic acid.*

Govindoo, del.

Pygeum Ceylanicum (Gærtn:)

Dunphy, Lith.

GLUTA TRAVANCORICA (Nat. ord. Anacardiaceæ.)

GLUTA (Linn.) *Gen. Pl.* 1. 421.—GEN. CHAR. Flowers hermathrodite, calyx spathaceous, splitting irregularly, caducous, petals 5 rarely 4-6 attached to the base of the torus spreading imbricate, torus stipitiform, stamens 4-6 equal inserted on to the torus above the petals, filaments free, ovary stipitate, depressed globose oblique 1 celled, style lateral or terminal filiform stigma simple, ovule pendulous from the funicle which rises from the base of the cell, fruit baccate pedicellate, with a rough brownish rind, seed shaped to the cell, cotyledons very large connate fleshy, radicle very small obtuse incurved. Trees, with caustic juice, leaves alternate towards the apex of the branches shortle petiolate simple oblong coriaceous, panicles axillary or terminal. (Syndesmis, *Wall, in Roxb. Fl. Ind.* ii. *p.* 314. Stagmaria, Jack, Mal. Misc. *Ex. Hook, Comp. Bot. Mag.* 1, 267.)

GLUTA TRAVANCORICA (Bedd.) A very large tree, leaves crowded about the apex of the branches alternate entire elliptic attenuated at both ends to obovato-elliptic, 4-6 inch long by $1\frac{1}{2}$—$1\frac{3}{4}$ broad, glabrous on both sides, petioles very short dilated, panicles terminal and from the upper axils crowded canescent with very short adpressed pubescence, calyx sub-entire or irregularly and slightly 5-toothed, splitting irregularly and early caducous, bracts ovate cymbiform, petals 5 imbricate, fruit depressed transversely oblong with a rough brownish rind, about 1 inch long and $1\frac{1}{4}$ to $1\frac{1}{2}$ broad.

Mr. Athol MacGregor, now the Collector of Malabar, first brought this tree to my notice as a valuable timber tree growing on the South Tinnevelly mountains and known as the Shen kurani. It is the first species of the genus found on the continent, though about 6 species inhabit the Archipelago, its timber is reddish in color, weighs 40 lbs. the cubic foot when seasoned, has a fine grain, takes a good polish and is well suited for furniture. The tree is most abundant in the dense moist forests on the Tinnevelly and Travancore chain of ghats above Paupanassum and grows to a very large size, trees having been observed up to 15 feet in girth and of immense height with a very straight stem.

Govindoo, del.

Dumphy, Lith.

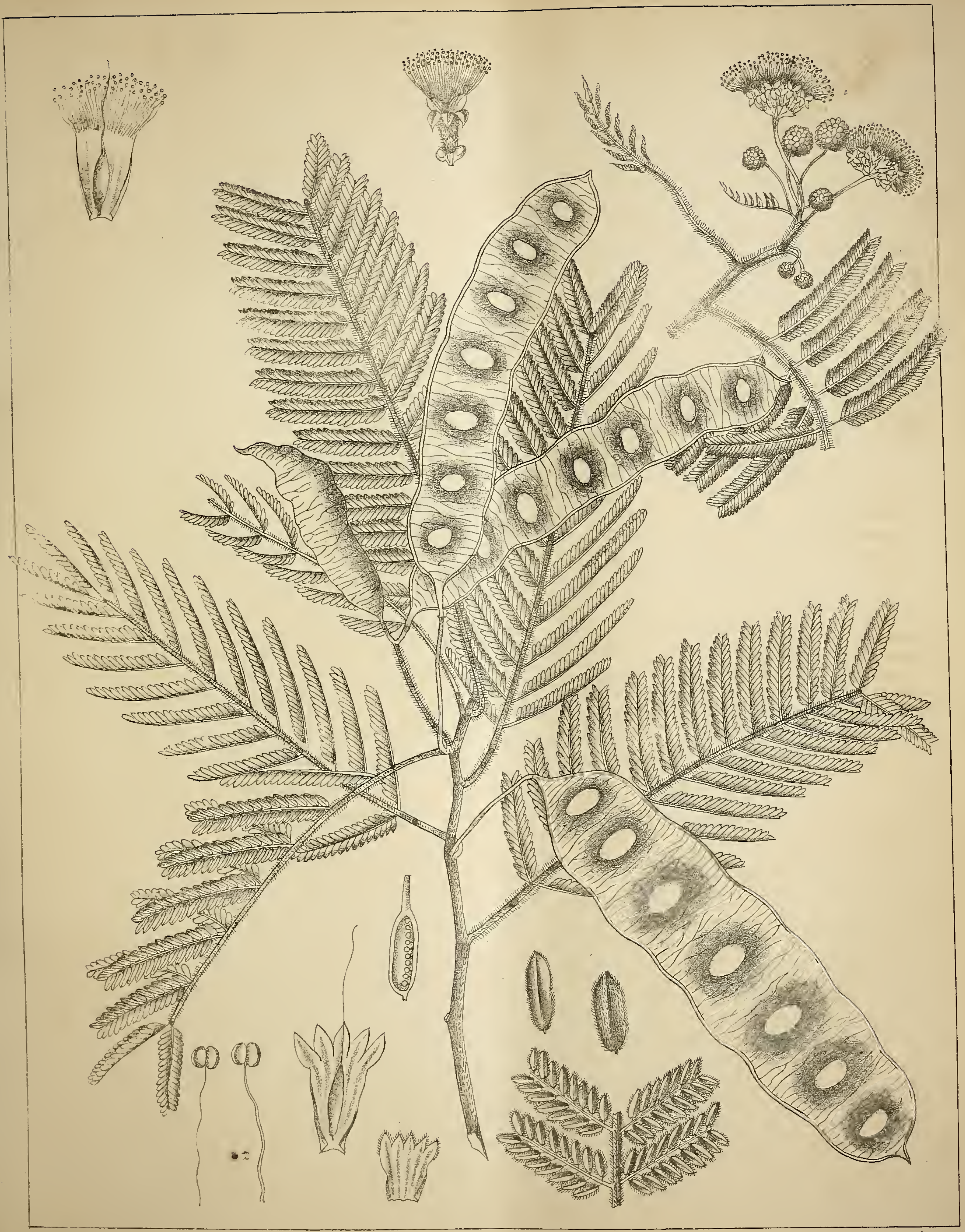
Gluta Travancorica (Bedd:)

ALBIZZIA AMARA. (Nat. order Leguminosæ; Sub-order Mimoseæ.)

For Gen. Char. see under "A. Lebbek."

ALBIZZIA AMARA. (Willd.) A tree, unarmed; branches terete, young shoots petioles peduncles and under side of the leaflets clothed with yellowish tomentum; leaves bipinnate, pinnæ 8-10 pair with a gland on the petiole and between the last pair, leaflets 20-30 pair, when old somewhat glabrous, stipules lanceolate, peduncles solitary or aggregated long and filiform in the axils of the upper leaves and racemose from the abortion of the leaves; flowers small in globular heads, corol 5 cleft, stamens long numerous monodelphous; legumes flat thin broadly linear 3-6 seeded. Acacia amara, *Willd. Sp.* 4, *p.* 1074;—*W. A. Prod. p.* 274. Mimosa amara, *Roxb. Fl. Ind.* ii, 548.

A tolerably large tree but of low stature, very abundant throughout the Madras Presidency, Mysore and Bombay, and also inhabits the north of Ceylon. It is called Nalla renga or Nalla regoo and Narlingee in Teligu, and Woonja in Tamil; it has a maximum height of about 30 *feet, with a girth seldom exceeding* 5 *or* 6 *feet. The wood is dark-brown, mottled, and very handsome, strong, fibrous, and stiff, close-grained, hard and durable, superior to Sàl and Teak in transverse strength and direct cohesive power, it is much used by the natives for building purposes, beams, &c., and in the construction of carts and ploughs, and makes excellent fuel, being most extensively cut for the Locomotives in the Salem district and along the Bangalore line; the natives use the leaves for washing their hair; the tree grows most rapidly as coppice.*



Govindoo, del. Dumphy, Lith.

Albizzia amara (Willd.)

MICHELIA NILAGIRICA. (Nat. order Magnoliaceæ.)

MICHELIA. *Linn. Gen. Pl.* 1. 19.—GEN. CHAR. Flowers hermathrodite, sepals and petals all similar and colored, 9-many, in 3-many series imbricate, anthers linear adnate introrse bursting longitudinally, gynophore stipitate, ovaries many, spicate one celled 2-8-many ovuled, carpels arranged in a loose spike of a consistence between leathery and fleshy opening from the apex downwards, seeds several externally fleshy. Trees, with entire leaves like the Magnolia, flowers large axillary fragrant white or yellow.

MICHELIA NILAGIRICA. (Zenker.) A handsome tree of considerable size with the young parts sericeo-villous, leaves elliptic acute, or oval obtusely acuminate or broadly obovate, glabrous on both sides or pubescent on the costa beneath, very variable in size 3-5 in. long, by $1\frac{1}{2}$-2 broad, petioles $\frac{2}{3}$rd in. long, flowers white, sepals and petals 9·12 exterior obovate, interior oblongo-lanceolate acute, spathes silky, stamens numerous shorter than the column of fructification, ovaries numerous, ovules 2-4, carpels warty arranged along a spike 2-3 inches in length. *Zenker Pl. Ind. t.* 20 ;—*Wight Ill.* i, 14 ; *Icon. t.* 938. M. Pulneyensis, *Wight Ill.* i. 14, *t.* 5. M. ovalifolia glauca et Walkeri, *Wight l. c.* 13.

This is a very ornamental Magnolia-like tree common on the higher ranges of the Nilgiris, Pulneys, &c., and on the elevated mountains in Ceylon, and occasionllay met with at lower elevations in our western forests. It differs considerably in the size and shape of the leaves, and size of its perianth-leaves, and Dr. Wight made several species of the S. Indin and Ceylon forms, but they all run one into another and cannot be properly distinguished, at least more than varieties. It is called Shemboogha in Tamil; the wood is strong, close and fine grained, but very hygrometrical; it is used for building purposes, beams and rafters.

Govindoo, del.

Dumphy, Lith.

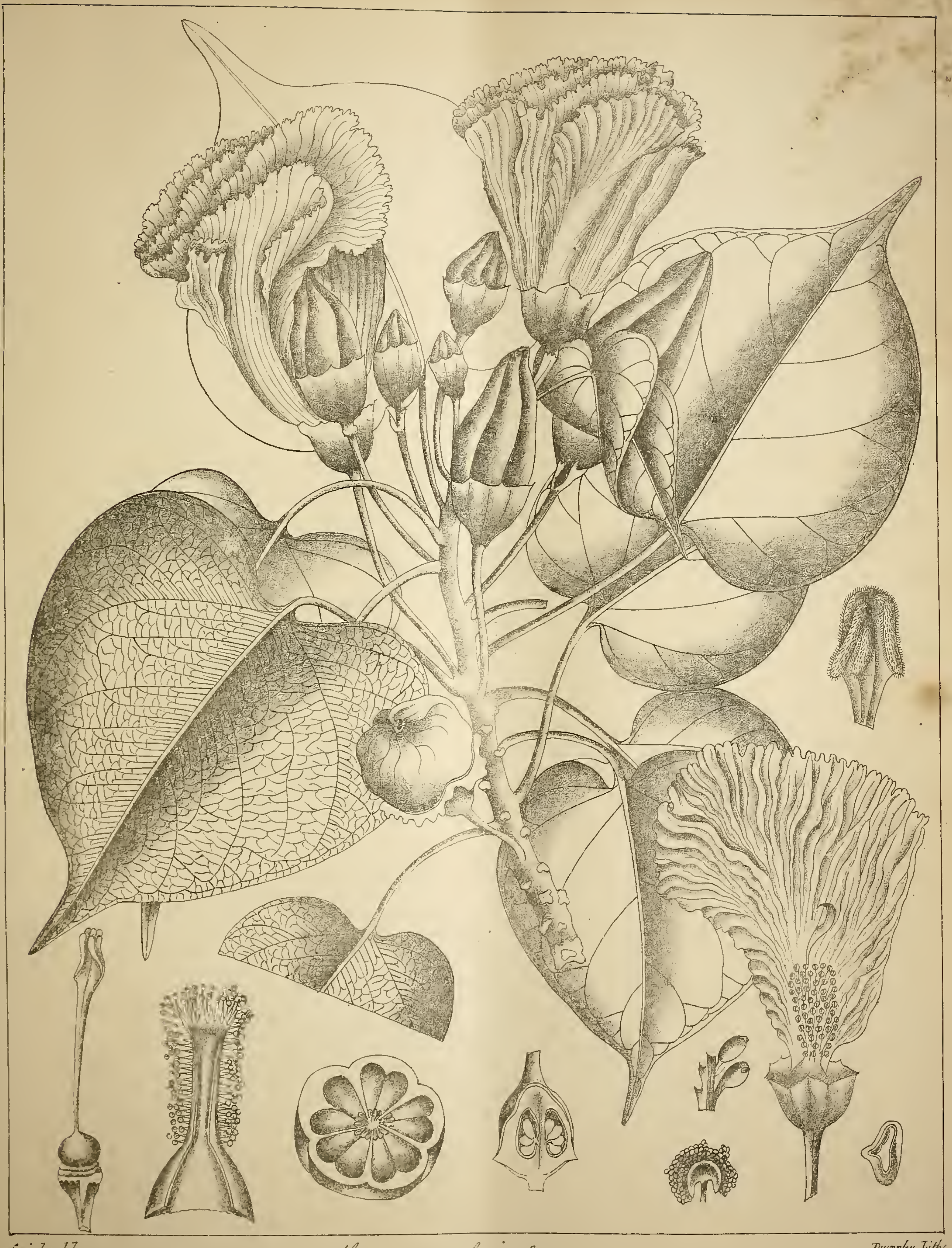
Michelia Nilagirica (Zenker)

THESPESIA POPULNEA. (Nat. order Malvaceæ.)

THESPESIA. *Corr. Gen. Pl.* 1. 208.—GEN. CHAR. Bractlets 3-8 small or deciduous, calyx minutely 5 dentate, rarely 5 cleft, column toothed at the apex; ovary 5-celled, each cell with a few ovules, styles club-shaped with 5 grooves, capsule woody coriaceous opening loculicidally or almost indehiscent, seeds obovoid glabrous or tomentose, cotyledons much folded enclosing the radicle often marked with small black dots. Trees or shrubs, leaves entire or lobed, flowers yellow; this genus is distinguished from Hibiscus by its confluent stigmas, more woody capsule and obovoid compressed seeds.

THESPESIA POPULNEA. (Cav.) A tree, young branches as well as the petioles, pedicels and calyx covered with small peltate scales, leaves long petioled cordate ovate acuminate, 7 nerved, smooth leathery entire or sinuous, stipules falcate, flowers solitary, axillary stalked, peduncles shorter than the petiole, epicalyx of 5 oblongo-lanceolate deciduous segments as long as or longer than the cup-shaped entire or slightly 5 lobed calyx, corol nearly 2 inches in length 4 times exceeding the calyx, fruit roundish depressed slightly beaked 5 celled indehiscent or opening to a slight extent at the top, seeds 2 in each cell of the fruit large compressed laterally near the hilum, roundish above, testa pubescent nervoso-striate. *Dc.* 1, 456. Hibiscus populneus, *Linn. Sp.* 976.

A handsome tree when in flower and of very rapid growth; it rarely exceeds 15 *or* 20 *feet in height, or a circumference of* 6 *feet; it is abundant throughout India and in Ceylon as an avenue or cultivated tree, particular near the coast, but I have never seen it in forests; it is very generally known by its Hindustani name of Pàras pipal, and is alled Pursa and Poorsung in Tamil, and the Portia tree by Europeans, and in Ceylon its native name is Sooreya. The tree grows very readily from cuttings; any large boughs stuck into the ground rooting readily, but these trees have always the heart wood very unsound, and are only fit for fuel, and besides have a gnarled and ugly appearance; handsome trees are grown from seedlings, and their timber is highly prized, it is strong, straight, even grained and durable, of a pale reddish color fading to reddish brown, and is easily worked. A cubic foot unseasoned weighs* 59 *to* 62 *lbs., and seasoned* 49 *lbs., and the specific gravity is* ·784; *it is much used for gun stocks and also for furniture, boat timbers, naves, felloes, pannels of carriages and cart framing, &c.; the capsules yield a yellow dye which is used as a wash for cutaneous diseases, as is also the bark boiled in water, and the latter is given internally as an alterative.*



Govindoo del. Dumphy, Lith.

Thespesia populnea (Corr.)

MESUA COROMANDELINA. (Nat. order Guttiferæ; Tribe Calophylleæ.)

MESUA. *Linn. Gen. Pl.* 1. 176.—GEN. CHAR. Flowers hermathrodite, sepals 4, petals 4, stamens numerous free or connate at the very base, filaments filiform, anthers erect oblong 2 celled dehiscing longitudinally, ovary 2 celled, style elongate, stigma peltate, ovules 2 in each cell erect, fruit from fleshy to nearly woody one celled from the obliteration of the dissipiment, 2 valved 1-4 seeded, seed exarillate, cotyledons thick fleshy, radicle very small. Trees, leaves simple oblong lanceolate very shining above, glaucous beneath, flowers large white axillary or terminal solitary.

MESUA COROMANDELINA. (Wight.) Leaves narrow lanceolate ending in a long tapering blunt point, shining above pale or more or less glaucous beneath, $2\frac{1}{2}$-$3\frac{1}{2}$ inches long by 1-$1\frac{1}{8}$ broad, petioles $\frac{3}{8}$ of an inch long, flowers axillary and terminal about $1\frac{1}{2}$ inch across when fully expanded, peduncles shorter than the petioles. *Wight Icones Pl.* 117. Mesua ferrea, *W. A. Prod. p.* 102 (*Excl. syn.*) Mesua pulchella, *Planch. et Triaw*, a Ceylon tree, is very closely allied.

This is a very handsome tree common in most of the mountain forests on the western side of our Presidency, growing with its congener M. speciosa, from which it is readily known by its much smaller leaves and flowers; it is generally known by the name of Nàghà or Nàghà Champa, and is called Nangal and Mallay Nàngal in Tamil, and on the Tinnevelly ghats, where it is very abundant and its timber much in use; it is called Nir Nang to distinguish it from Mesua speciosa which is called Nàng. All the Mesuas have a very hard heavy reddish colored timber known as Iron wood and perhaps the hardest and heaviest timber in India, axemen dislike very much to fell them, as they turn the edge of their axes, the wood is most valuable for engineering purposes and is largely used in Ceylon, and this species is much in use with the natives in Tinnevelly, and is looked upon as one of their best timbers, but in the Wynad and other parts, where it is also abundant, it is not utilized and seems hardly to be known.

Govindoo, del.

Mesua Coromandelina (Wight.)

Dumphy, Lith.

DIOSPYROS EBENUM. (Nat. order Ebenaceæ.)

DIOSPYROS. *Dalech, Dc. Prod.* viii, *p.* 222.—GEN. CHAR. Flowers diæcious, calyx 4-6 lobed or very rarely splitting irregularly, corol tubular campanulate or hypocrateriform æstivation convolute 4-6 lobed, stamens in the male flowers 8-50 generally about 16 inserted at the base of the corol or on the disk or partly on both, filaments of equal length or very unequal and each bearing 1-7 anthers, anthers linear lanceolate, ovary abortive, stamens in the female flowers 0-4-8 or more sterile, ovary 4-8 or rarely 12 celled usually covered at the base with the somewhat enlarged calyx. Trees or large shrubs armed or unarmed, leaves alternate rarely subopposite, flowers axillary, the female solitary, the male usually in little clusters.

DIOSPYROS EBENUM. (Retz.) A large tree, leaves glabrous shining membranaceous or slightly coriaceous, oblong obtuse or shortly and bluntly acuminated, 2-7 inches long by $\frac{3}{4}$ to $2\frac{1}{2}$ broad, petioles 2-4 lines long, male peduncles short pilose bracteated about 3 flowered, calyx funnel-shaped slightly pilose, 4 cleft at the apex, corol long hypocrateriform shortly 4 cleft at the apex, stamens 8-10 inserted on to the base of the corol, generally 2 cleft, each division bearing an anther, one of which is much longer than the other, sometimes 3-4 cleft with as many anthers, no rudiment of an ovary, female flowers solitary, calyx 2 bracteated much larger than in the male, deeply 4 cleft with a callous elevated, 4 lobed marginal ring round its mouth, stamens 8 with double anthers (sterile) inserted on to the base of the corol, stigmas 4, ovary 8 celled, albumen not ruminate. *Dc. Prod.* viii, *p.* 234;—*Wight's Icones, t.* 188.

This valuable tree is not uncommon in our mountain forests on both sides of the Presidency and in Ceylon ; it yields the best kind of Ebony, generally jet-black but sometimes slightly streaked with yellow or brown, it is very heavy, close and even grained, and stands a high polish, unseasoned it weighs 90 *to* 100 *lbs. the cubic foot and* 81 *lbs. when seasoned, and has a specific gravity of* 1·296 ; *it is used for inlaying and ornamental turnery and sometimes for furniture, but there is not much demand for it in this Presidency. The sap wood is white, hard, close-grained and strong but not durable, but is used by the natives for various purposes ; it is called Nalluti in the Cuddapah and Kurnool hill forests, where the tree is very common and well known. The tree figured by me in my Annual Report for* 1866-67 *as Diospyros assimilis is very nearly allied if distinct as a species, it differs however in each of the stamens in the male bearing* 4-6 *anthers instead of generally only* 2 *and the stamens in the female flower being single instead of double, its leaves turn very black in drying ; it is called Kará márá in the South Canara forests, where it is very common both in the heavy forests in the plains and on the ghats.*

The plate represents a fruiting branch of the female tree, a flowering twig of the male, and dissections of the flowers of both sexes.

Govindoo, del.

Dumphy, Lith.

Diospyros Ebenum (Retz.)

DIOSPYROS EXSCULPTA. (Nat. order Ebenaceæ.)

For Gen. Char. see under " Diospyros Ebenum."

DIOSPYROS EXSCULPTA. (Ham.) A good sized tree, all the young parts covered with rusty down, leaves alternate and opposite, oval to elliptic attenuated at both ends softly downy, 3-5 inches long by $1\frac{1}{2}$-2 broad, petioles $\frac{1}{4}$ to $\frac{1}{2}$ inch long, male peduncles a little shorter than or the length of the petioles, 3 flowered, calyx campanulate, 4-6 lobed at the apex, lobes acute erect, corol gibbous 4-6 parted, divisions of the corol very downy rounded at the apex, stamens 10-15 seated on the hairy receptacle, no rudiment of an ovary, female flowers solitary short pedicelled, calyx deeply 4-6 parted with the lobes reflexed at the margin outwards, corol 4-6 parted, divisions rounded at the apex, stamens none, ovary round hairy 4-5 celled, styles 2 each 2 cleft, fruit size of a pigeon's egg edible. *Dc. Prod.* viii, *p.* 223. Diospyros tomentosa, *Roxb. F. Ind.* ii, *p.* 532.

This valuable tree is not uncommon in the Cuddapah, Salem and Kurnool forests, and probably elsewhere in our Presidency, and is found in Bengal and Bombay, it grows to a considerable size and yields a valuable jet-black ebony very similar to that of ebenum, in fact I doubt if the 2 woods could be easily distinguished; it is called Tunki in the Cuddapah district and Tumboornee in the Bombay Presidency. The tree sheds all its leaves in the cold season, and they appear again with the flowers in the beginning of the hot weather.

The plate gives a branch of the male tree in flower and a branch of the female in fruit, and dissections of both male and female flowers.

Govindoo, del.

Diospyros exsculpta (Ham.)

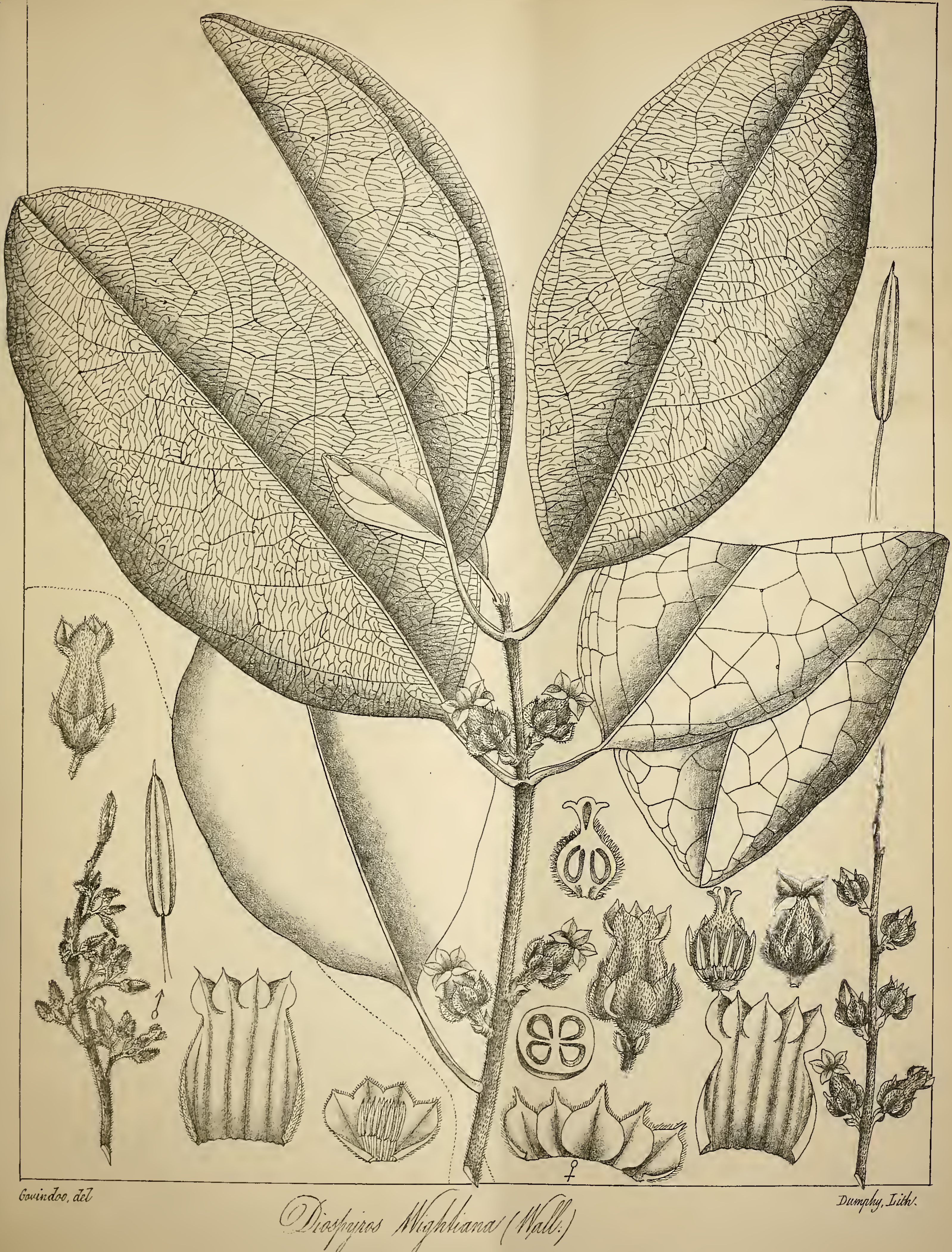
DIOSPYROS WIGHTIANA. (Nat. order Ebenaceæ.)

For Gen. Char. see under " D. Ebenum."

DIOSPYROS WIGHTIANA. (Wall.) Arboreous, young parts and inflorescence densely velvetty with golden or rust colored down, leaves alternate and opposite oblong or oval acute or obtuse or sometimes cordate at the base densely velvetty beneath, less so or glabrescent above 3-7 inches long by $1\frac{1}{2}$ to 3 broad, petioles $\frac{1}{4}$ to 1 inch long velvetty, male flowers on small cymose peduncles which are the length of or longer than the petioles and densely velvetty bearing 6-9 flowers on 2-3 pedicels, calyx tubular slightly 4–5, cleft at the apex, teeth sharp erect, corol tubular 4-5 lobed at the very apex, lobes acute, stamens about 13 seated on the disk, no rudiment of an ovary, female flowers solitary on thick peduncles which are bracteated at the apex and much shorter than the petioles, calyx deeply 4-5 lobed with the lobes acute and reflexed at the margin outwards, corol about twice as long as the calyx, tubular 4-5 lobed at the apex glabrous within and outside at the base, lobes acute, stamens 8-10 sterile seated on the disk, ovary 4 celled, styles 2 each 2 cleft, fruit large edible. *DC. Vol.* viii, *p.* 223.

This tree is common in most of our dry forests, and until I examined it critically I always considered it the D. melanoxylon, which species I have not met with if distinct from this, but this has always a 4 celled ovary, and quite answers to the description of D. Wightiana as given in De Candolle's Prodromus; its heart wood yields a jet black ebony like the two former, but the trees are always small and stunted in the trunk, as far as I have observed, and all ebony in log I believe comes from the two former species. It is called Tendu in Hindustani, and Tunki Tumi and Tumbi in Tamil and Telugu; it sheds its leaves in the cold season, and they appear again with the flowers yearly in the hot season.

The plate gives a flowering branch of the female tree, and a flowering twig of the male, and dissections of both male and female flowers.



Govindoo, del. Dumphy, Lith.

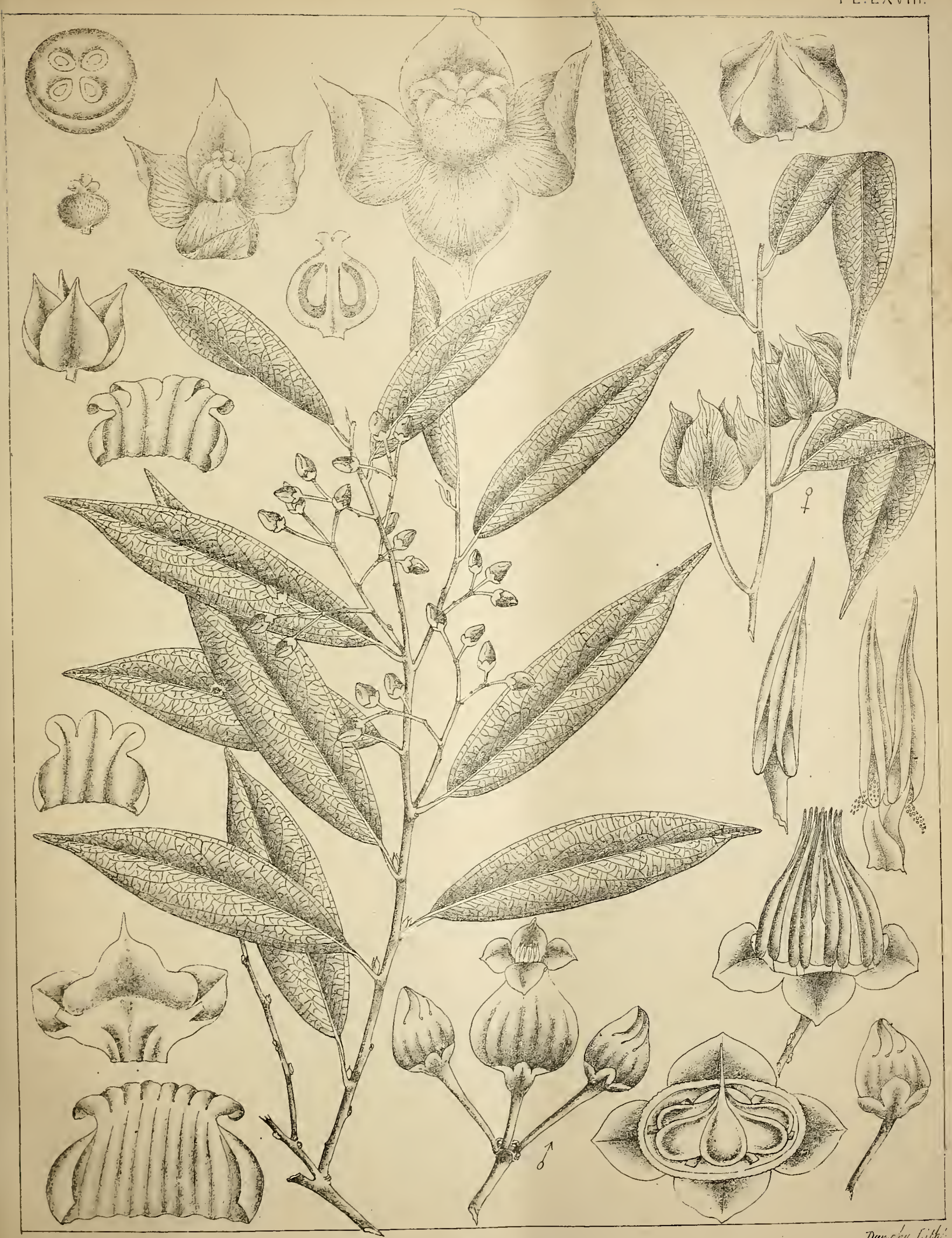
Diospyros Wightiana (Wall.)

DIOSPYROS CALYCINA. (Nat. order Ebenaceæ.)

DIOSPYROS CALYCINA. (Bedd.) A good sized tree, every where glabrous, leaves dark shining green narrow lanceolate attenuated at the base, tapering at the apex into a very blunt point about 3-3½ inches long by a little less than 1 inch broad, petioles about ¼ inch long, male cymes about half the length of the leaves 3-9 flowered, calyx small 4 toothed, corol urceolate very gibbous at the base 4 lobed at the apex, bright yellow in color, stamens 6 or 8 each with 2 anthers of equal length placed on the disk surrounding the large rudimentary ovary, apex of the anthers inflexed and meeting over the sterile ovary which latter is 5 lobed and terminates in a long acumination, filaments slightly hairy ; female flowers solitary on long peduncles nearly half the length of the leaves, calyx of 4 rarely only 3, large cordate imbricate nerved segments which enlarge with the fruit, corol urceolate gibbous tube nearly globose, 4 rarely only 3 cleft at the apex, divisions reflexed, staminodia none, ovary 4-celled, stigmas 4 or 3 sessile, fruit globose, covered with hairlike scales. *Bedd. Annual Report of the Conservator of Forests, Madras Presidency, for* 1867-68, *t.* 1 *and* 2.

This very curious species of Diospyros has only been observed in the Tinnevelly district and southern portions of Madura, where, however, it is very abundant in the ghat forests from the foot up to 3000 *feet elevation ; it is called Vellay Toveray, and yields a valuable light colored wood, which is much in use in the Tinnevelly district.*

The plate gives a flowering branch of both male and female trees, and dissections of the flowers of both sexes and young fruit.



Govindoo, del. Dunphy, Lith:

Diospyros calycina (Bedd:)

DIOSPYROS EMBRYOPTERIS. (Nat. order Ebenaceæ.)

For Gen. Char. see under "D. Ebenum."

DIOSPYROS EMBRYOPTERIS. (Pers.) A middling sized tree, trunk erect straight, bark blackish rust colored, branches spreading smooth, leaf buds silky, leaves alternate lanceolate or elliptic coriaceous, quite glabrous and shining, about 6 inches long by 2 broad, petioles about ½ an inch, male peduncles axillary, the length of the petioles 3-5 flowered pedicels reflexed minutely pubescent furnished with 1 small deciduous bract, calyx spreading shortly 4 lobed hairy outside, corol campanulate nearly 3 times as long as the calyx, 4 cleft about half way down lobes ovate ciliate, filaments about 20 double bearing 40 erect linear anthers; female flowers axillary solitary much larger than the male, peduncles and calyx pubescent, filaments 1·4 sterile situated on the corol near the base, ovary globular 8-12 celled with one pendulous ovule in each cell, styles 4-6 ? spreading, stigmas branched 2-3 cleft, berry globular size of a small apple, yellow and covered with rust colored farina, seeds usually 5-8 immersed in pulp. *DC. Vol.* viii, 235. Diosp. glutinosa, *Roxb. Fl. Ind.* ii, 533.

This is a common tree on the western coast, particularly near backwaters, and is also found in many of our forests in Bengal, Mysore, Bombay and Ceylon; it is called Gaub in Hindustani, Tumil in Teloogoo, and Timberee in Ceylon; the timber is only of average quality, and is used for building purposes, and the very viscid juice of the young fruit is used for paving the seams of fishing boats, and fishing nets, and lines are steeped in it for durability, and the unripe fruit contains a very large portion of tannin. Masts and yards of country vessels are made from this tree in Ceylon.

Govindoo, del.

Dumphy, Lith.

Diospyros Embryopteris (Pers.)

BIGNONIA XYLOCARPA. (Nat. order Bignoniaceæ.)

BIGNONIA. *Linn. DC.* ix., 143.—GEN. CHAR. Calyx 5-toothed at the margin rarely entire or 5-parted or 2-3 lobed, corol 2 lipped or nearly equal 5 cleft, stamens 4 fertile didynamous a 5th sterile ; anthers with glabrous cells very often distinct, stigma bilamellate ; capsule with the valves scarcely convex or flat, partition flat parallel to the valves ; seeds in a single row at each side of the partition, winged on both sides, wing pellucid. Trees or shrubs, leaves almost always opposite but very various.

BIGNONIA XYLOCARPA. (Roxb.) A large tree, trunk straight, bark ash-colored rather spongy and considerably cracked, branches sparse, leaves opposite bi-tripinnate 1-4 feet long, leaflets short petioled from semi-cordate to obliquely-oblong entire acuminate glabrous but hard 2-5 inches long by 1-1¼ broad, petioles common and partial channelled and sharply angular scabrous with elevated gray specks, panicles terminal corymbose branches several times dichotomous with a single flower in the forks slightly pubescent, bractes ovate-oblong, flowers large white with a tinge of yellow very fragrant, calyx campanulate unequally 5-toothed colored corol campanulate shortly tubular with 5 rounded much curled lobes, stamens as in the genus with a fifth sterile one, ovary oblong with an annular disk round its base 2-celled with numerous ovules attached to 2 thick equi-distant receptacles on each side of the partition, style the length of the stamens, stigma of 2 oblong lobes, capsule linear variously bent about 2 feet long by 1-1½ inches in diameter, of a very hard woody texture and extremely rough with numerous hard tubercles, 1 celled 2 valved partition contrary sub-cylindric spongy, seeds numerous winged, cotyledons thin nearly round emarginate, radicle short. *Roxb. Fl. Ind.* iii. 108.

A common tree in almost all the Madras forests and in Mysore, Bengal and Bombay; the leaves are deciduous in the cold weather and appear again with or a little after the flowers in March or April; it is a handsome tree and a rapid grower, and worthy of cultivation for ornamental purposes; it is called Vadencarni in Tamil; wood brownish yellow, rather close-grained, takes a good polish, and is used for cabinet purposes.

The plate represents only a portion of a flowering panicle and a very young fruit.

Govindoo, del.

Dunphy, Lith.

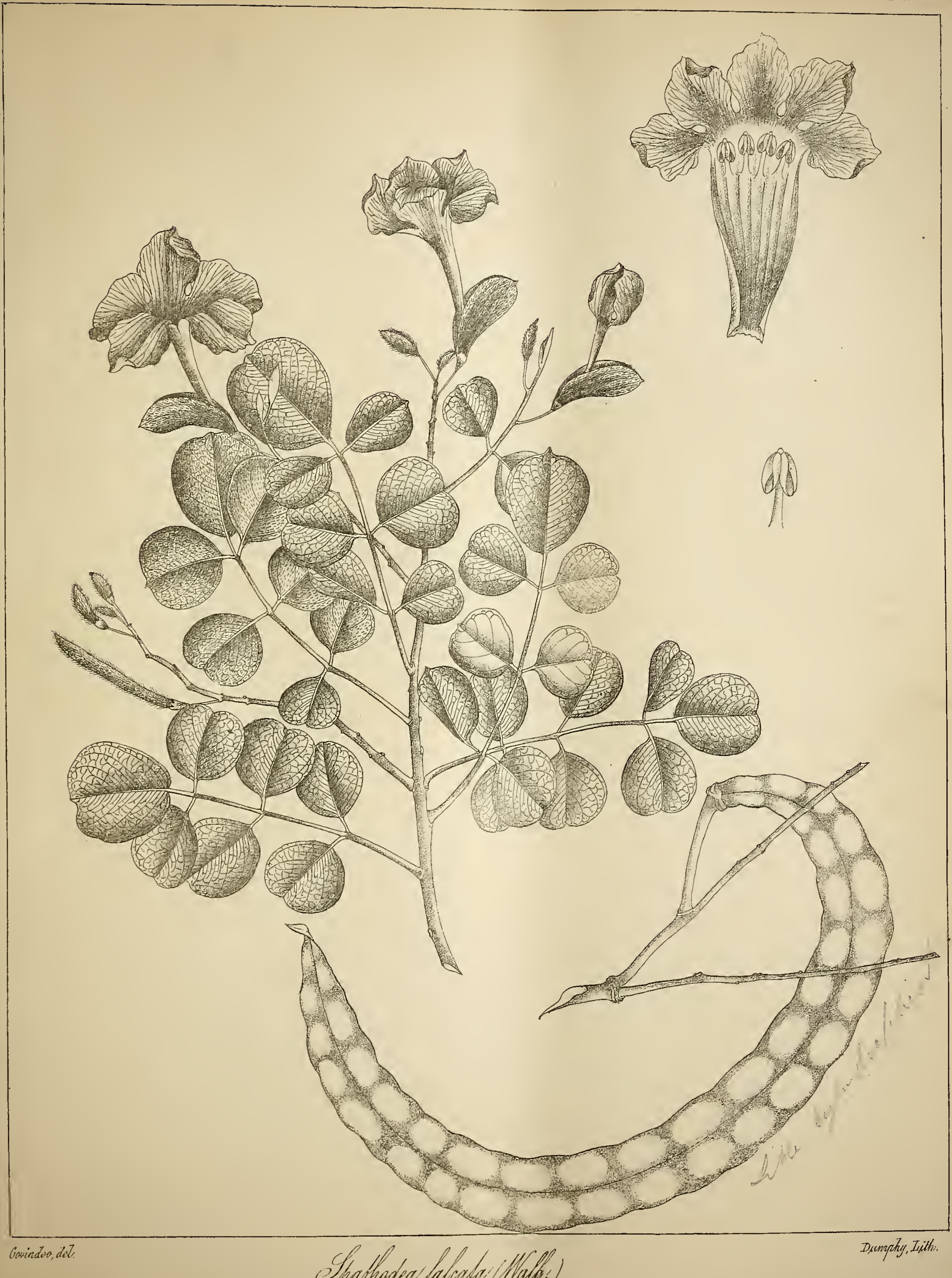
Bignonia xylocarpa (Roxb.)

SPATHODEA FALCATA. (Nat. order Bignoniaceæ.)

SPATHODEA. *Beauv. DC. Prod.* ix, 203.--GEN. CHAR. Calyx spathaceous closed when young at length longitudinally split, then toothed or entire, corol somewhat infundibuliform, limb 5 cleft slightly unequal, stamens 4 didynamous with a fifth sterile, anthers with the cells separate, stigma bilamellate, capsule 2-celled loculicidally dehiscing, partition contrary corky or coriaceous, seeds corky membranaceously winged, attached to the partition not immersed in pits. Trees, leaves opposite rarely alternate, simple, conjugate digitate or unequally pinnate.

SPATHODEA FALCATA. (Wall.) A small tree, trunk very irregular in size and shape, bark light ash-colored, young shoots covered with whitish-down, leaves opposite and alternate unequally pinnate, 3-6 inches long by $1\frac{1}{2}$-2 broad, leaflets opposite 2-3 pairs with a terminal odd one nearly orbicular often very retuse at the apex entire slightly downy short petioled from 1 to 3 inches both ways, racemes about as long as the leaves few flowered, flowers white pretty large, calyx a spathe about $\frac{2}{3}$rds open on the convex side, corol tube longer than the calyx, cylindric border about $\frac{1}{2}$ inch across, 5 parted divisions flat equal oblong, stamens as in the genus with a fifth sterile one sometimes present, stigma 2-lobed and capsule linear about 8-12 inches long pendulous twisted in various forms. *Wall. List No.* 6517. Bignonia spathacea, *Roxb. Fl. Ind.* iii, *p.* 103.

A small or middling sized tree common in most of the forests in the Madras Presidency, in Mysore and Bombay, but not found in Ceylon or Birma; it is called Wodi in Teligoo. The timber is light colored, strong and serviceable, and much used by the natives for agricultural purposes, building, &c.



Govindoo, del. Dumphy, Lith.

Spathodea falcata (Wall.)

STEREOSPERMUM CHELONOIDES. (Nat. order Bignoniaceæ.)

STEREOSPERMUM. *Cham. DC. Prod.* ix, 210.—GEN. CHAR. Calyx coriaceous cup-shaped cylindric subtruncate obtusely 5 toothed, corol tube straight companulate limb bilabiate, 5 lobed, stamens 4 fertile, and a fifth small sterile, anthers 2 lobed naked, disk fleshy 5 lobed, ovary cylindric stigma bilamellate, capsule tetragonous or cylindric elongated membranaceous, partition contrary to the valves very cellular and corky thick, seeds bony thinly winged laterally immersed, except the wings, in notches in the partition.

STEREOSPERMUM CHELONOIDES. (Willd.) A large tree, trunk very straight and of great height and thickness, bark thick scabrous brown, branches very numerous, the inferior horizontal, above gradually becoming more and more erect, leaves opposite unequally pinnate about 1 foot long, leaflets opposite with an odd one short petioled generally 4 pair, the inferior smallest obliquely oval ovate or oblong entire pointed sometimes slightly notched about the margin, glabrescent, about 4 inches long by 2 broad, panicles terminal the larger ramifications decussate, the smaller or terminal 2 forked with a sessile flower in the fork, peduncles and pedicels round covered with oblong gray scabrous specks, bracts small caducous, flowers pretty large yellowish very fragrant, calyx 4 (—5 ?) toothed at the apex, with the two upper teeth bidentate, disk a yellow fleshy ring round the base of the ovary, filaments as in the genus with a fifth sterile one, anthers double, stigma 2 cleft, capsule nearly 2 feet long slender twisted sharply tetragonous, receptacle of the seeds spongy white with alternate notches along the sides in which the seeds lodge. *Roxb. Fl. Ind.* iii. 106 ;—*Wight Icones, t.* 1341.

This handsome tree is very common in almost all the forests of the Madras Presidency, up to an elevation of about 3000 *feet, and in Mysore, Bombay, Bengal, Birmah and Ceylon, it is generally known by the Tamil name of Pàdri and is called Kàlà goru and Mokà Yèpà in Telugu, Pàdel in Bombay, Loolpoo madala in Ceylon, and in Birma Thakooppo. The wood is of a beautiful orange yellow color, close and even grained, elastic and durable, easily worked, and gives a smooth glossy surface; a cubic foot weighs 57 to 60 lbs. unseasoned, and 48 lbs. when seasoned, and its specific gravity is ·768 ; the sapwood is rather coarse-grained, of a brownish white color, and not durable. The wood is much used in housebuilding and for a variety of purposes by the natives ; the roots, leaves, and flowers are used medicinally.*

A good & useful timber tree.?
Some of the description does not agree for the tree now in flower at Mercantile Bank House in Cambridge Place, 21st July 1880.
Flowers blotched like those of Aristolochia Indica, & are not fragrant! — It is not our Lunu-madala! Leaves & panicle very diff. from our plant.

Govindoo, Del.

Dumphy, Lith.

Stereospermum chelonoides (Willd.)

POLYALTHIA COFFEOIDES. (Nat. order Anonaceæ.)

For Gen. Char. see under "P. cerasoides."

POLYALTHIA COFFEOIDES. (Thw.) A good sized tree, young parts minutely puberulous, leaves lanceolate or oblongo-lanceolate glabrous on both sides shining above, (veins very prominent beneath) acute or rounded at the base, gradually attenuated into an obtuse point at the apex, margins slightly undulate, 4-10 inches long 1½-3 broad, petiole ¼ inch long, pedicels several together from woody tubercles about the trunk and larger branches or solitary or twin in the axils of the fallen leaves on the young branches, 1-1½ inches long, minutely adpresso-puberulous, articulated at the base, and furnished with 2-3 deciduous squamæform bracts, sepals nearly round, petals coriaceous, glabrous or slightly hairy, lanceolate, acute or obtuse at the apex, about an inch long, inner ones rather larger, carpels puberulous about 1 inch long ovoid attenuated at both ends on pedicels about 1 inch long, seed oblong, 7 lines long 5 lines broad, flowers cream-colored. Guatteria coffeoides. *Hook. and Thom. Fl. Ind. p.* 141.

A common tree in all the moist forests on the western side of the Madras Presidency, from 1,000 *to about* 3,500 *feet elevation, and in Ceylon. It is very abundant in the Wynad, where the Kurambars make ropes from the bark, which when fresh has a strong smell of ammonia. The tree is found in flower at all seasons but most plentifully so in March and April. I know nothing of its timber, the young leaves come out a most brilliant red color, and the tree is highly ornamental.*

Dumphy Lith.

[illegible] ficoides Hk f et T.

POLYALTHIA FRAGRANS. (Nat. order Anonaceæ.)

For Gen. Char. see under "P. cerasoides."

POLYALTHIA FRAGRANS. (Dalz.) A large tree, leaves ovate, oblong or oblongo-lanceolate, rounded at the base generally oblique ; very prominently veined, especially beneath, glabrous above, slightly pubescent on the costa and veins beneath, 4-9 inches long 2-5 inches broad, petioles about $\frac{1}{4}$ inch long, peduncles about an inch long, from the axils of the fallen leaves, pedicels filiform, 1 inch long, and (as are the calyx and petals) hoary-puberulous, furnished with a half cup-shaped bract about the middle, sepals small rotundate; petals 1-1$\frac{1}{2}$ inches long narrow linear attenuated at the apex, sub-equal ; torus dilated depresso-globose, carpels 10-20 oblique ovoid 1-1$\frac{1}{2}$ inch long, hoary puberulous, long pedicelled. *Dalz. in Hook. Kew. Misc.* iii. 206 ;—*Hook. and Thom. Fl. Ind. p.* 142.

A large tree common in the moist forests of the Anamallays, 2-3,000 *feet, in Malabar, on the South Canara ghats and Bombay Presidency, and probably throughout the western ghats of Madras. I am unacquainted with its timber.*

Mois, del. Dunphy, Lith.

Polyalthia fragrans (Dalz.)

MITREPHORA GRANDIFLORA. (Nat. order Anonaceæ.)

MITREPHORA. (Blume.) *Benth. and Hook. Gen. Pl. p.* 26.—GEN. CHAR. Sepals 3 small, petals 6, valvate in 2 series, exterior large open furnished with veins, sometimes persistent (after the interior have fallen) and increasing in size, interior unguiculate connivent into a mitreform cap over the genitalia, stamens numerous densely packed oblong cuneate, ovaries numerous oblong, style oblong or truncate, ovules 4-many in one or 2 series on the ventral suture. Trees often of large size, leaves coriaceous.

MITREPHORA GRANDIFLORA. (Bedd.) A large tree, young parts minutely aureo-pubescent, leaves ovate lanceolate, or elliptic with a short blunt acumination, thinly coriaceous glabrous and shining above, glabrescent beneath, with hairy glands in the axils of the veins, 4 5 inches long by 1½-2½ broad, petioles about ½ an inch long, peduncles leaf-opposed furnished with a bract below each flower, 2-3 flowered shorter than the petioles, flowers subsessile, bud globose densely aureo-pubescent, exterior petals 1 to 1¼ inches long, by ⅝ to ⅞ of an inch broad densely adpressedly velutinous on the outside, sub-glabrous within, pure white turning to yellow, interior petals ⅘ to ⅝ of an inch long triangular at the apex, with a long broad claw, very hairy at the apex, glabrous below, white beautifully streaked with carmine, forming a mitreform cap over the genitalia, early deciduous, stamens and ovaries indefinite as in the genus, ovules 4-6 in 2 series, young carpels densely velvetty, mature about the size of a hazel-nut globose and 1 seeded, or oblong and 2 seeded fuscous with dense short tomentum, and furnished with a raised furrow down the whole length.

South Canara ghat forests, elevation about 2,000 *feet. A large very handsome tree; when in full flower it is very beautiful, its large flowers giving it at the distance more the appearance of a Magnoliaceous than an Anonaceous tree, the three inner petals or mitreform cap are early deciduous, but the three outer ones subsequently increase in size and turn from pure white to yellow; the timber is very tough. The specimen figured was gathered on the Coloor ghat.*

Govindoo, del. *Mitrephora grandiflora (Bedd.)* Dunphy, Lith.

ALPHONSEA MADRASAPATANA. (Nat. order Anonaceæ.)

ALPHONSEA. (Hook. f. et. T.) *Gen. Pl. p.* 29.—GEN. CHAR. Sepals 3 small, petals 6, valvate in 2 series, subequal ovate open or spreading stamens 6 many, laxly imbricated, connective apiculate and slightly produced beyond the conspicuous dorsal anther cells; torus hemispherical, ovaries 4, many (rarely solitary) style oblong or depressed, ovules 4-8 in 2 series on the ventral suture (or rarely 1 erect), fruit pedicellate. Trees with very shining coriaceous leaves, flowers small fascicled.

ALPHONSEA MADRASAPATANA. (Bedd.) A tree, leaves glabrous, very shining on the upper surface, lanceolate or elliptico-lanceolate or occasionally oblong or ovate, coriaceous, prominently reticulated beneath, obtuse at the apex, about $3\frac{1}{2}$ inches long by $1\frac{1}{2}$ broad, petioles about $\frac{1}{4}$ inch long, rugulose glabrous or slightly puberulous, peduncles leaf-opposed or above the axils, very short, pedicels 1-6, $\frac{1}{4}$ to $\frac{1}{2}$ an inch long, puberulous furnished with a bract below the middle, flowers bright yellow, sepals ovate small, petals about $\frac{3}{8}$ of an inch long, puberulous on the outside, stamens 12 in 2 series, ovaries 3-4, style subglobose, slightly curved, ovules about 8 in 2 rows, carpels ovoid fulvo-tomentose.

A very handsome evergreen shade yielding tree, common on banks of streams on the Cuddapah and North Arcot hills, from no great elevation up to 3,000 *feet. I am not acquainted with its timber ; it is well worthy of cultivation.*

Gov: indoo del; Dumphy, Lith:

Alphonsea Madrasapatana (Bedd.)

HYDNOCARPUS ALPINUS. (Nat. order Bixineæ.)

HYDNOCARPUS. (Gærtn.) *Benth. and Hook. Gen. Pl. p.* 129.—GEN. CHAR. Flowers diœcious, sepals 5 distinct much imbricated, petals 5, scales 5 opposite the petals. Male flower, stamens 5-8, anthers oblong uniform fixed on to the filaments at their base, no rudiment of an ovary. Female flower, staminodia 5 many, stigmas 3-6 as many as the placentæ in the ovary, sessile dilated, or on very short styles, fruit large globose, pericarp woody, seeds numerous with a crustaceous striated testa, albumen fleshy, cotyledons ovate foliaceous plane or subplicate. Trees, leaves shortly petiolate serrate or entire, racemes axillary few flowered. *Gœrt. Fruct.* 1. 288. *t.* 60.

HYDNOCARPUS ALPINUS. (Wight.) A very large ramous tree, 70-100 feet high, leaves alternate ovate acuminate entire glabrous 4-6 inches long by 1-2 inches broad, when young red, afterwards deep green, sepals all equal reflexed, petals ovate lanceolate glabrous, scales narrow lanceolate as long as the petals ciliated towards the apex ; male, stamens 5, filaments much shorter than the petals glabrous, anthers obtuse ; female, calyx, corol and stamens as in the male, but the latter sterile, stigmas 5 sessile obcordate spreading, fruit size of an apple clothed with short brown tomentum, seeds many, enclosed in white fleshy pulp, radicle elongate pointing to the hilum. *Wight. Ic. tab.* 942.

A very handsome tree with a beautiful foliage, common on the Nilgiris, up to nearly 6,000 *feet, and on the Calcad hills Tinnevelly, at an elevation of* 1,500 *feet, and probably throughout the western ghats of Madras ; also in Ceylon, elevation* 1,500 *feet, called Maratatti on the Nilgiris, where the wood is much used for beams and rafters for native houses ; it answers as deal for general purposes, packing cases, &c. ; it splits readily, and is a good firewood. The tree flowers in July and August.*

Alvis, del. *Hydnocarpus alpinus, (Wight.)* Dumphy, Lith.

SCOLOPIA CRENATA. (Nat. order Bixineæ.)

SCOLOPIA. *Schreb. Gen. Pl. p.* 127.—GEN. CHAR. Flowers hermathrodite, sepals 4-6 slightly imbricate when very young but open long before flowering, petals as many and nearly similar, stamens indefinite inserted on to the thickened torus with or without glands. Connective of the anthers terminating in a thick process; ovary with 3-4 placentas and few ovules. Style filiform, with an entire or lobed stigma; fruit a berry, seed 2-4 with a hard testa, cotyledons leafy. Trees, often armed with axillary spines, leaves simple with pinnate veins entire or toothed. Flowers small in axillary racemes. *Schreb. Gen.* 335. Phoberos, *Lour. Fl. Coch.* 317. Rhinanthera, *Bl. Bijdr.* 1121. Dasyanthera, *Presl. Rel. Hank.* ii. 90. *t.* 66.

SCOLOPIA CRENATA. (Wight.) A good sized tree, unarmed, leaves glabrous elliptic slightly attenuated at the base and gradually narrowed into an obtuse point at the apex, obtusely crenated, without glands at the base, 3-4 inches long by 1-1¼ broad, racemes pubescent as long or a little longer than the leaves from the superior axils, flowers nearly ½ an inch in diameter on longish peduncles which are furnished with 2-3 small bracts at the base, calyx and corol scarcely distinguishable pubescent and ciliated, placentas of the ovary 4, fruit 5 lines in diameter apiculate. Phoberos crenatus, *WA. Prod. p.* 29. Flacourtia crenata, *Wall l. n.* 6679. Phoberos lanceolatus, (Wight). *WA. Prod. p.* 30.

This tree is very common on the Shevaroys, Nilgiris, &c.; it is called Hitterloo by the Burghers on the Nilgiris; it is a first-rate wood, and although white, is very hard and dense; it resists the saw and injures tools; planks are said to twist. The Phoberos lanceolatus of Wight has the leaves narrower and more shining but does not differ otherwise.

Alwis, del.

Scolopia crenata, (Wight)

Dumphy, Lith.

BIXA ORELLANA. (Nat. order Bixineæ.)

BIXA. *Linn. Benth. & Hook. Gen. Pl.* 1. 125.—GEN. CHAR. Flowers hermathrodite, sepals 5 much imbricated deciduous, petals 5 large imbricate, stamens indefinite with short oblong somewhat tetragonous anthers dehiscing by 2 pore-like transverse slits at the top (really linear anthers folded back upon themselves dehiscing only in the middle of each lobe), ovary 1-celled with 2 or rarely 3 multiovulate placentas, style slender, stigma minutely 2 lobed, capsule coriaceous compressed ovoid or subcordate, rarely 3 gonous rough with long stiff bristles, separating into 2 or 3 valves, bearing the seeds covered with a red pulp.

BIXA ORELLANA. (Linn.) A small tree or shrub 10-15 feet, the young shoots and inflorescence rusty-puberulous, leaves alternate ovate or subcordate-ovate, acuminate or entire rarely with 1 or 2 unequal lateral lobes, palminerved at the base usually 4-6 inches long by $2\frac{1}{2}$-$3\frac{1}{2}$ inches broad, glabrous or glabrescent; flowers white or rose colored $1\frac{1}{2}$-2 inches in diameter in terminal panicles or panicled racemes, fruit $1\frac{1}{2}$-2 inches long $1\frac{1}{4}$ inches broad, rather pointed. *DC. Prod.* 1. 259;—*Wight. Ill. tab.* 17.

This small tree, though of American origin, is quite naturalized in the Madras Presidency, particularly on the western coast. The red pulpy covering of the seed is used as a dye under the name of Arnotto; it is prepared by macerating the pod in boiling water, extracting the seeds, and leaving the pulp to subside, the fluid being subsequently thrown off, the residuum with which oil is often mixed is placed in shallow vessels and dried in the shade; it is of a bright yellow color and imparts an orange or pale rose color, to silk and cotton; the substance is worth 1s. the lb. in the London Market; it has medicinal qualities, being astringent and esteemed an antidote to dysentery. Cordage is made from the bark of the tree, and the wood is a good one for producing fire by friction.

Alwis, del. Dumphy, Lith.

Bixa Orellana, (Linn)

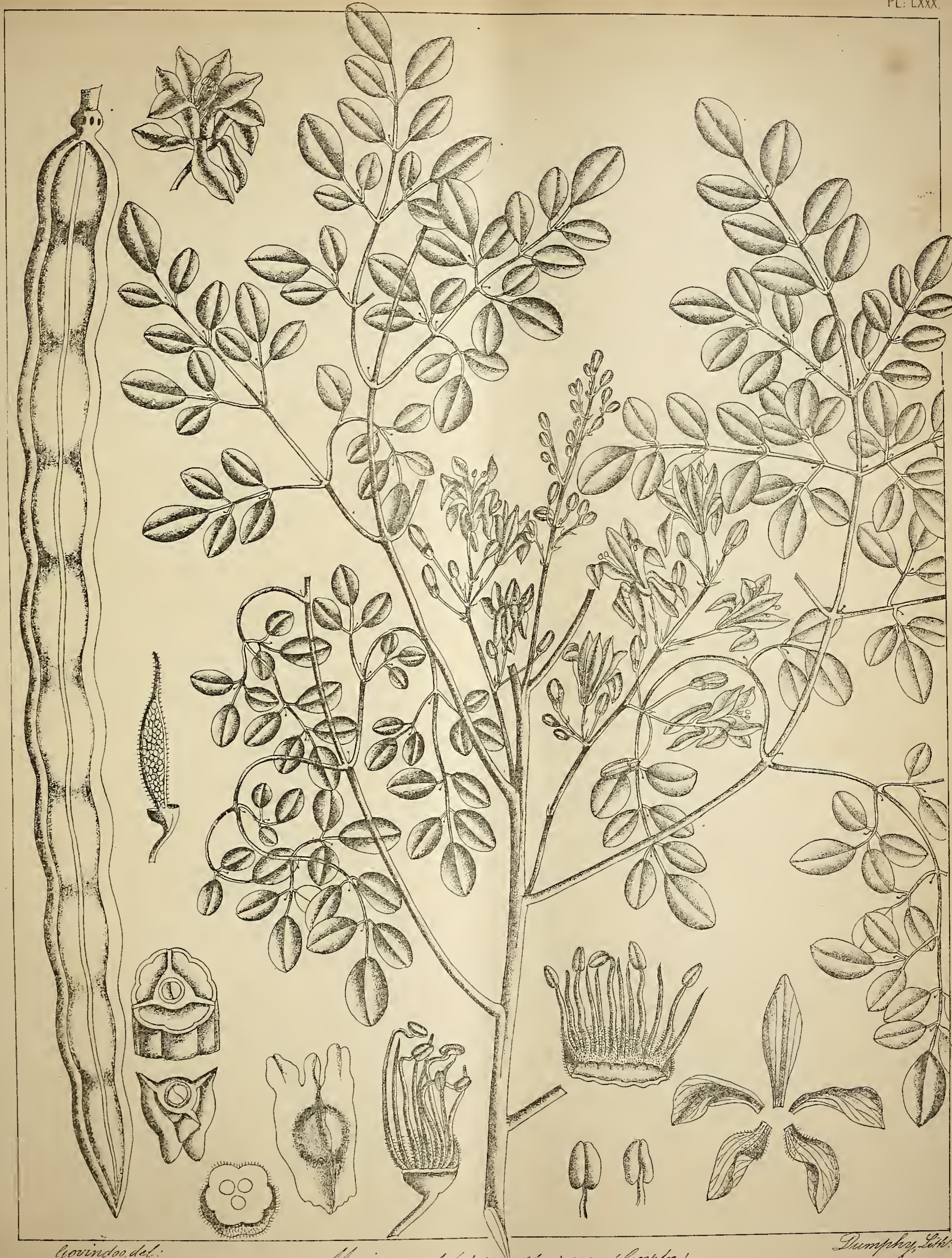
MORINGA PTERYGOSPERMA. (Nat. order Moringaceæ.)

MORINGA. *Juss.*—GEN. CHAR. Same as that of the order, for which see Manual.

MORINGA PTERYGOSPERMA. (Gærtn.) A small or middling sized tree, leaves twice or thrice pinnate, leaflets small oval, a stalked gland present on the petioles at the insertion of the pinnæ and the same at the insertion of the secondary pinnæ, and of the leaflets, flowers white or rarely reddish, 5 fertile stamens and 5-7 staminodia, capsules triquetrous seeds 3 angled, the angles expanding into wings. *Gærtn. fr.* 2 *p.* 314 *t.* 147;—*Rheed. Mal.* 6 *t.* 11 ;—*Wight Ill. tab.* 77.

This is the horse radish tree of India. It is very common about villages throughout India, and is quite wild in some jungles; the root furnishes the horse radish and the fruit is eaten in curries; the seeds yield a very pure sweet oil which is used as salad oil in the West Indies, and is also employed by watchmakers, as it does not freeze at a very low temperature. The tree is very easily raised from seed; its timber is very soft and useless, and not even fit for fuel; its twigs and leaves are good fodder. An oil exudes fom incisions in the trunk, which is used in rheumatism.

Mr. Dalzell describes, in his Bombay Flora, a second species under the name of M. Concanensis, *which he states is wild on the ghats in the Concan, and which only differs from this in having larger and rounder leaflets, and in the flowers being yellowish streaked with pink; it is probably only a variety of the tree here figured. A wild variety very abundant on the hills in North Arcot, particularly so in the Thelle jungles about 16 miles from Vellore, has also much larger and rounder leaflets than the ordinary cultivated form, and is probably Mr. Dalzell's tree, though I have not seen it in flower; the natives informed me that the fruit of this wild variety is never eaten; there were no traces of flower or fruit on any of these trees in the month of December, though all the cultivated ones at the same period were in flower.*



Govindoo, del: Dumphy, Lith:

Moringa pterygosperma (Gærtn)

ERYTHROXYLON INDICUM. (Nat. order Lineæ.)

ERYTHROXYLON. *Linn. Benth and Hook. Gen. Pl. p.* 283.—Sepals 5, rarely 6, united into a lobed calyx or free, petals as many with a 2 lobed appendage inside below the lamina. Stamens 10, rarely 12, the basal tube short without glands, or more or less thickened into 10 glands, the filaments attached inside just below the crenulate top, ovary 3 rarely 4 celled with 1 or rarely 2 ovules in each cell, drupe usually 1 seeded, albumen copious or thin or none, styles 3 rarely 4 free, or more or less connate. Trees or shrubs, leaves entire, stipules united into 1 with the petiole deciduous or persistent, especially on the leafless base of the young shoots ; flowers small whitish, solitary or clustered in the axils of the leaves or of leafless stipules. *L. Gen. n.* 575. Steudelia, *Spreng.* Sethia, *Kunth.*

ERYTHROXYLON INDICUM. (DC.) A small tree, leaves alternate obovate or oblong obtuse cuneate at the base, feather nerved reticulated with veins, under side pale, 1-1½ inches long, by about ½ an inch broad, pedicels axillary 1-3 about twice as long as the petiole, 1 flowered, calyx 5 lobed, styles 3 combined nearly to the apex longer than the stamens, stigmas clavate, drupe oblong triangular 3 celled, 2 of the cells small abortive. Sethia Indica, *DC. Prod.* 1 *p.* 576. Erythroxylon, monogynum, *Roxb. Fl. Ind.* 2 *p.* 449.

This small tree is common throughout the Madras Presidency ; the timber is flesh colored and excellent, but of small size ; the tree is known as the bastard Sandal, and is called Devadaru in Tamil ; the wood is used as a substitute for Sandal-wood, and an empyreumatic oil or wood-tar, of a reddish brown color, is procured from it, which is used for preserving the wood employed in the construction of native boats.

Alwis, del

Erythroxylon Indicum (D.C.)

Dumphy, Lith.

BOMBAX MALABARICUM. (Nat. order Malvaceæ.)

BOMBAX. *Linn. Benth and Hook. Gen. Pl. p.* 210.—GEN. CHAR. Calyx cup-shaped truncate or splitting into 3-4 lobes, staminal column divided into numerous filaments of which the inner ones or nearly all are more or less connected in pairs and united at the base into 5 or more bundles, ovary 5 celled with several ovules in each cell, style club-shaped or shortly 5 lobed at the top. Capsule woody or coriaceous, opening loculicidally in 5 valves, the cells densely woolly inside, seeds obovoid or globular enveloped in the wool of the pericarp, albumen thin, cotyledons much folded round the radicle. Trees, leaves digitate with leaflets usually entire, peduncles 1 flowered axillary or terminal, flowers white or red. Salmalia, *Schott.*

BOMBAX MALABARICUM. (DC.) A gigantic tree, the trunk at least when young covered with short conical prickles, leaves on long petioles deciduous, leaflets 5-7 petiolulate, elliptical-oblong acuminate 4-6 inches long coriaceous entire glabrous, flowers large red or white on short peduncles clustered towards the end of the branches, which are then destitute of leaves, calyx 1 inch long and more, thick coriaceous glabrous outside, silky-hairy inside dividing into short broad obtuse lobes, petals 3 inches long, oblong tomentose outside, subglabrous within, staminal column short, filaments much longer, but shorter than the petals, 5 innermost forked at the top each branch bearing an anther, about 10 intermediate ones simple, and the numerous outer ones shortly united in 5 clusters, capsule large oblong and woody. *DC. Prod.* 1. 479. Salmalia Malabarica, *Schott Meletem* 35. Bombax heptaphylla, *Cav. Wight Ill. t.* 29;—*Roxb. Fl. Ind.* iii. *p.* 167. Moul elavao, *Rheede Mal.* iii. *p.* 61. *t.* 52.

This gigantic tree is a very conspicuous and beautiful object in all our forests; its trunk is beautifully straight and often 80 or 100 feet to the first bough, of great girth, and generally furnished with very large buttresses. The flowers are very large and handsome, but appear when the tree is destitute of leaves; it is called the cotton tree by Europeans, Simal in Hindustani, Boorgha in Teligu, and Illavam in Tamil; the timber is generally considered quite worthless in this Presidency, but in some parts of the western coast, trunks are hollowed out to make river canoes, the wood is whitish, coarse grained, weak and brittle, soon decays, and is very subject to the attack of white ants; in some parts the timber is used for boxes, planks, &c., and it is said to be rendered more durable by the action of water, and is consequently used for water conduits, well-curbs, &c., and sword scabbards are occasionally made of it. The cotton is used to stuff pillows, &c., but is useless for textile purposes; the gum from the bark and the root are in use medicinally amongst the natives. It is found throughout India, and in Birmah and Ceylon; in the latter place it is called Katu-imbal, and is in use for toys, models, floats, &c.; it makes a very poor fuel. The white flowering variety is much rarer than the red.

Bombax Malabaricum (D.C.)

Dumphy Lith.

GORDONIA OBTUSA. (Nat. order Ternstræmiaceæ.)

GORDONIA, *Linn. Benth. and Hook. Gen. Pl.* 1 *p.* 186.—GEN. CHAR. Sepals about 5, much imbricated very unequal passing from the bract to the petals, petals about as many, the innermost, the largest, all usually cohering at the base, stamens numerous, anthers short, versatile, ovary 3-5 celled (rarely 6,) with several (4-8) pendulous ovules in each cell, capsule woody oblong opening loculicidally, the valves bearing the dissepiments, but usually leaving a free central axis; seeds flattish oblique, expanded at the top into an oblong wing, albumen 0 embryo nearly straight with flat cotyledons. Trees, leaves coriaceous, peduncles 1 flowered erect or recurved, flowers showy.

GORDONIA OBTUSA. (Wall.) A middling sized tree, glabrous, leaves cuneate-oblong to elliptic-lanceolate or narrow lanceolate, obtuse or with a blunt acumination with shallow serratures glabrous $2\frac{1}{2}$-5 inches long, by 1-$1\frac{1}{4}$ broad, petioles about 2 lines long, peduncles a little shorter than the petioles, petals obcordate, slightly united at the base, silky on the outside as are the bracts and calyx, stamens somewhat pentadelphous. *Wall. L. n.* 1459;—*WA. Prod. p.* 87. Gordonia parviflora, *Wight. Ill.*

This very beautiful tree is very common on the Nilgiris, the Wynad, and throughout the western ghats of the Madras Presidency, from 2,500 *feet to* 7,500. *On the Nilgiris it is called Nagetta; its timber is white, with a straw tint, even grained and pleasant to work, and not unlike Beech; it is very generally in use for planks, doors, rafters, and beams, but warps if not well seasoned.*

The plate is a complete plagiarism on W's Illus. vol 1. t. 34 & this not quoted in any way for the plate.

Govindoo, del.

Gordonia obtusa. (Wall.)

Dunphy Lith.

VATERIA MALABARICA. (Nat. order Dipterocarpeæ.)

VATERIA. *Linn. Benth. and Hook. Gen. Pl. p.* 193.—GEN. CHAR. Calyx with a very short tube adnate to the torus, divisions sub-equal imbricate, when in fruit reflexed and scarcely increasing in size, stamens numerous, in many series, anthers linear or oblong, ending in a long single or double beak, ovary 3 celled, cells 2 ovuled, style subulate, stigma small, capsule ovoid or globose, thick coriaceous or fleshy, seated on the reflexed calyx, 1 seeded indehiscent or 3 valved ; seed thick, cotyledons thick unequal, radicle superior.

Trees, yielding resin, glabrous or furfuraceous, stipules small deciduous or inconspicuous, leaves entire coriaceous, flowers white in terminal panicles. Bentham and Hooker unite Mr. Thwaites' Ceylon genus Stemonoporus with Vateria; it has 15 anthers in 2 series, and if united with Vateria, Monoporandra, with 5 anthers in 1 series, should also be included. De Candolle includes Stemonoporus under Vatica, which has an enlarged calyx when in fruit.

VATERIA MALABARICA. (Bl.) A very large tree, bark whitish, young shoots and all tender parts except the leaves covered with fine stellate pubescence, leaves alternate petioled oblong entire, slightly cordate at the base, shortly pointed or obtuse at the apex, coriaceous and smooth 4-8 inches long, by 2-4 broad, petioles 1 inch long, stipules oblong, flowers rather remote on large terminal panicles, bractes ovate pointed, filaments 40-50 very short, anthers not auricled at the base, terminating in a single long bristle at the apex, style a little longer than the stamens, stigma acute, capsule oblong obtuse coriaceous fleshy, 2-2½ inches long by 1½ broad, seed solitary. *Bl. Mus. Bot.* ii. *p.* 29. Vateria Indica, *Roxb. Fl. Ind.* ii. 602. (not *Linn.*) Chloroxylon Dupada, *Buchanan Journal in Mysore, &c.*, ii. 476. Paenoe, *Rheed. Hort. Mal.* iv. 33. 15.

This tree has often been confounded with the Ceylon Vateria Indica, though it was well described by Roxburgh ; it differs in its leaves and fruit being very much smaller, and in the former being obtuse or scarcely acute, never acuminate, and in its anthers terminating in a single instead of in a double bristle and in not being auricled at the base.

This is one of the handsomest trees in the Madras Presidency ; it is common in all the western forests from the plains up to 3000—4000 feet elevation, and is extensively planted as an avenue tree, particularly near the coast in South Canara, Malabar and Travancore; the avenue of it at Karkul, in S. Canara, is a beautiful sight. It is called in English the Piney Varnish tree, the copal tree, and the white dammer tree, in Telugu Dupada, in Tamil Vellay Kungilium, and in Canarese Paini. It yields the piney gum resin which exudes copiously from wounds in the trunk, and is an excellent varnish resembling copal, and of a pale green color, and is used for carriages and furniture ; the wood is not much esteemed, but is used for coffins and masts of native vessels, and trunks of the tree are hollowed out to make canoes for the western coast rivers ; the bark is used to keep toddy from fermenting. The tree flowers in January. Mr. Broughton the Government Quinologist has furnished me with the following report on the resin.

RESIN OF VATERIA INDICA, *White dammer or piney resin.—This beautiful substance has long been known, and its properties and local uses have been repeatedly described. It is also not unknown in England, and I apprehend that its cost (and perhaps also ignorance of its peculiar properties) has prevented it becoming an article of more extended commerce. It should be remarked that the "East Indian dammer" which is well known among varnish makers, though frequently confounded with this, is the product of a very different tree, and is not produced in this Presidency. The finest specimens of piney resin are obtained by making incisions in the tree, and are in pale green translucent pieces of considerable size. The resin that exudes naturally, usually contains much impurity. In most of its properties it resembles copal, but it possesses qualities which give it some advantages over the latter. Like copal it is but slightly soluble in alcohol, but as Berzelius pointed out in the case of copals, it can be brought into solution by the addition of camphor to the spirit. It is easily soluble in chloroform, and thus might find a small application as a substitute for amber in photographer's varnish ; it differs most advantageously from copal by being at once soluble in turpentine, and drying also without the necessity of the preliminary destructive fusion required by that resin, a process which tends greatly to impair the color of the varnish. The solution of the piney resin in turpentine is turbid and milky, but by the addition of powdered charcoal, and subsequently filtering, it yields a solution transparent and colorless as water, and yields a varnish which dyes with a purity and whiteness not to be surpassed. The solution in turpentine readily mixes with the drying oils. It is on these properties of the resin that its chance of becoming an article of trade will depend. In price it cannot compete with copal when supply to the European market is regular and abundant. The present price of the best copal in the English market is but £2-10-0 per cent ; piney resin yields on destructive distillation 82 per cent. of an oil of agreeable odour, but not differing essentially from that obtained from much cheaper resins.*

Vateria ~~Malabarica~~, (Bl)

Dumphy Lith.

GARCINIA CAMBOGIA. (Nat. order Guttiferæ.)

GARCINIA. *Linn.*—GEN. CHAR. Flowers diœcious or polygamous, sepals 4 in opposite pairs, petals 4; male flower, stamens indefinite free monadelphous or tetradelphous, anthers erect or peltate dehiscing longitudinally or circumscissile, female or hermathrodite flowers, staminodia various free or united, ovary 2 many celled, stigma sessile lobed, smooth or tuberculate, ovules solitary, fruit baccate, embryo an undivided thick radicle (tigella)—Glabrous trees, usually with a yellow juice, leaves coriaceous or submembranaceous, opposite or ternately verticellate, flowers solitary, fascicled or subpaniculate axillary or terminal.

GARCINIA CAMBOGIA. (Desrous.) A good sized tree, leaves lanceolate of a deep lucid green, 4-6 inches long by about 2 broad, flowers terminal or axillary, sessile sub-sessile or pedicelled solitary or several together; male, anthers numerous on a short thick androphore oblong 2-celled, dehiscing longitudinally introrse; female, staminodia surrounding the base of the ovary in several phalanges each containing 2-3 sterile spathulate stamens (or free and as many or twice as many as the cells of the ovary ?) stigmas 5-10 lobed papillose with glands, ovary 6-10 celled, fruit $2\frac{1}{2}$-3 inches in diameter yellow or reddish, 6-10 sulcated, 6-10 seeded, nearly globular or ovate or somewhat elongated, furrows broad with angular edges, and intervening flattened or only slightly rounded ridges, the furrows not being continued to the apex which is smooth and depressed and often nipple-shaped.—*DC. Prod.* 1. 561;—*WA. Prod. p.* 100. Garcinia Kydia, *WA. Prod. p.* 101. Cambogia gutta, *Linn. in part.* Garcinia Roxburghii, *Wight Ill. p.* 125 ? Garcinia papilla, *Wight Icones tab.* 960.

Common in all the western coast forests of the Madras Presidency, and in Ceylon; the pigment which exudes from the trunk is semitransparent, very adhesive and quite unsuitable as a paint; the acid rinds of the ripe fruit are eaten, and in Ceylon they are dried and eaten as a condiment with curries. * No

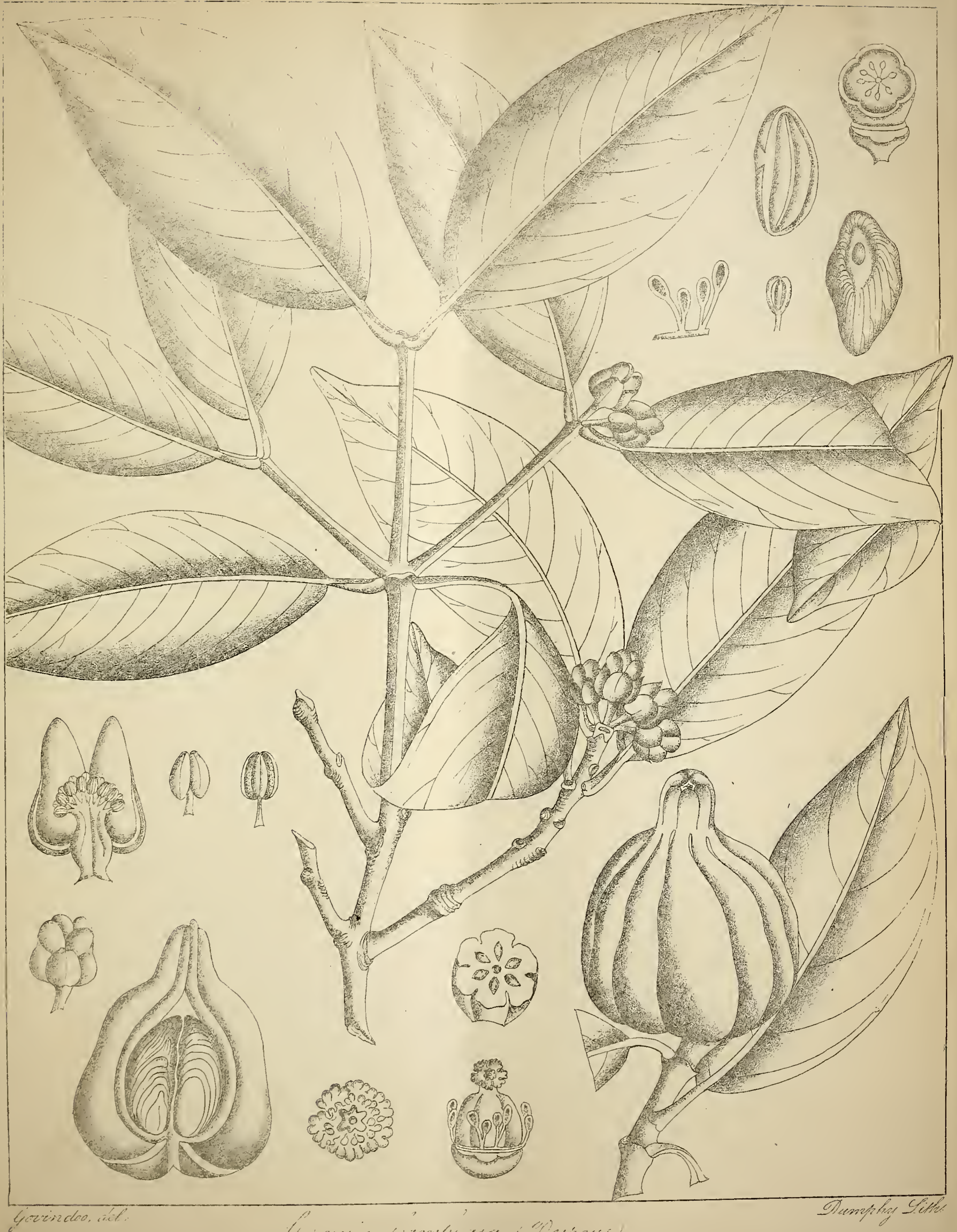
The tree is called Heela by the Burghers on the Nilgiris, and it yields an excellent straight grained lemon colored slightly elastic wood, which is easily worked, and would answer for common furniture.

* The inside of the fruits of some varieties are as good nearly as those of the Mangosteens, & are eaten. The acid rinds are pickled & are often used as a condiment in curries but are not eaten.

Plate not good for fruit of our Goraka.—

This plate is plagiarised from Wight's Icones tt. 960 & 960½ with slight difference — for the G. papilla.

Pl. LVII



Govindoo, del.

Dumphy Lith.

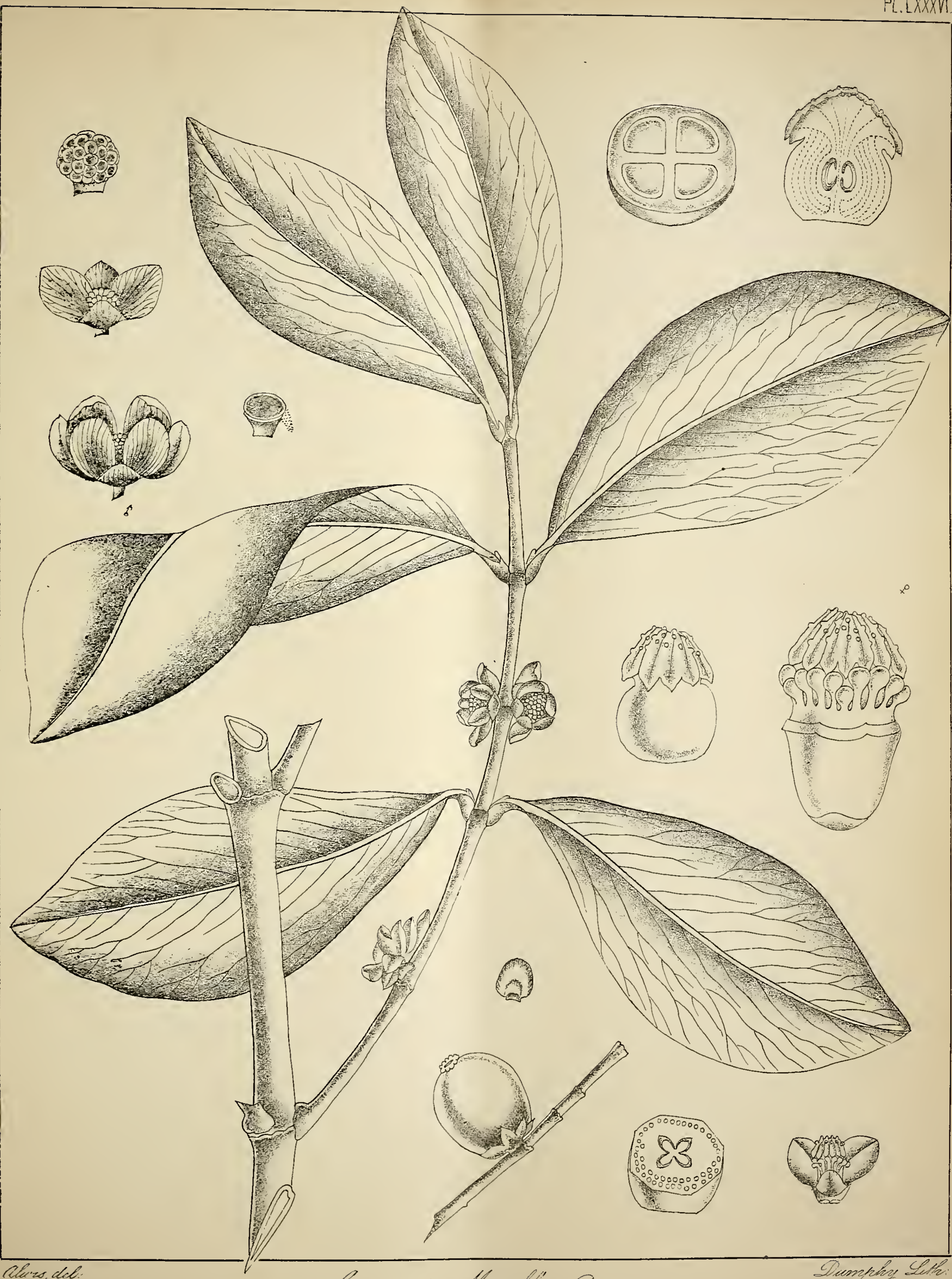
Garcinia Cambogia. (Desrous)

GARCINIA MORELLA. (Nat. order Guttiferæ.)

For Gen. Char. see under "G. Cambogia," Pl. lxxxv.

GARCINIA MORELLA. (Desrous.) A middling sized tree, everywhere glabrous, leaves elliptic with a very obtuse blunt point and gradually attenuated at the base, about 4 inches long by $1\frac{1}{2}$ to 2 broad, petioles about $\frac{1}{4}$ inch long, flowers sessile several together in the axils of the fallen leaves, calyx of 4 unequal sepals the 2 inner being much larger than the 2 outer; male, stamens about 26 closely packed on a raised receptacle in the centre of the flower without any rudiment of an ovary, anthers on very short thick filaments depressed peltate circumscissile; female flower, stamens 18-20 in one series round the base of the ovary, anthers sterile subquadrate emarginate at the apex, ovary glabrous 4 celled crowned with a large sessile 4 lobed stigma the lobes being 2-3 toothed at the margins, fruit size of a cherry globose 4 seeded. Cambogia Gutta, *Linn. Fl. Zeyl. p.* 87 *in part.* Hebradendron Cambogioides, *Graham in Hook. Comp. to Bot. Mag. Vol.* ii. *p.* 199, *t.* 27. Garcinia gutta, *Wight Ill.* 1. 126 *and tab.* 44. G. elliptica, *Wall.*

South Canara, moist forests of the plains and ghats, up to 2,000 *feet elevation. Ceylon, up to* 2,000 *feet elevation; called Gokatoo or Kana-goraka in Ceylon, and Aradal and Punar puli in S. Canara; it is the true Gamboge of commerce, and the pigment which exudes from wounds in the trunk is largely collected and exported from Ceylon and Siam; but little or no attention seems to be paid to it in this country. In this Presidency I have only met with the tree in S. Canara, though it probably occurs elsewhere; it is closely allied to G. pictoria, which is our common species, and scarcely distinguishable except by the female flower. The drawing is from specimens collected in S. Canara, and the analysis from fresh flowers.*



Alurs, del. Dumphy Lith.

Garcinia Morella; (Desrous)

GARCINIA PICTORIA. (Nat. ord. Guttiferæ.)

For Gen. Char. see under "G. Cambogia."

GARCINIA PICTORIA. (Roxb.) A good sized tree, everywhere glabrous, leaves elliptic with a blunt rather sudden point at the apex, and gradually attenuated at the base, about 4 inches long by 1½ broad, flowers sessile aggregated in the axils of the fallen leaves; male, stamens numerous closely packed on a fleshy more or less 4 sided receptacle in the centre of the flower, filaments short, anthers depressed peltate circumscissile, no rudiment of an ovary; female, staminodia in a ring round the base of the ovary, filaments in 3-4 rarely 5 phalanges each bearing 2-7 sterile clavate anthers, ovary oblong 4 celled, stigma sessile of 4 verrucose lobes which are 3-4 toothed at the margins, berry size of a large cherry oval oblong smooth crowned with the permanent stigma. *Roxb. Fl. Ind.* ii. p. 627. (Desc. of fem. flower incorrect.)

This is a very common tree in all our western forests up to about 3,500 *feet elevation* ; *it is closley allied to G. Morella, but differs in the female flower.*

Mr. Broughton has analyzed some of the pigment, and informs me that it is excellent and quite equal to that of G. Morella. The timber is used by the natives for various purposes. The drawing is taken from fresh specimens collected about the foot of the Nilgiris below Makurty.

Govindoo. del.

Dumphy, Lith.

Garcinia pictoria. (Roxb.)

XANTHOCHYMUS PICTORIUS. (Nat. order Guttiferæ.)

XANTHOCHYMUS. *Roxb.*—GEN. CHAR. Flowers polygamous or diœcious, sepals 5 imbricate, petals 5 ; male flowers, stamens in 5 narrow oligandrous phalanges inserted into or betwesn the lobes of a fleshy disk ; female or hermathrodite flower, staminodia or stamens in 5 phalanges alternating with as many glands and seated round the base of the ovary, ovary 3-6 celled with a subsessile discoid entire or radiately 3-6 lobed stigma, ovules solitary, fruit baccate, embryo thick fleshy with inconspicuous cotyledons. Trees, resembling Garcinia and scarcely differing except in their pentamerous instead of tetramerous flowers.

XANTHOCHYMUS PICTORIUS. (Roxb.) A very beautiful middling sized tree, with a most dense foliage of dark green shining leaves, everywhere glabrous, young branches square, sharply angled and often dilated just below the axils of the leaves, leaves oblong, generally more or less attenuated at the base with a short acute point at the apex, 8-14 inches long by 2-3$\frac{1}{4}$ broad, very hard and coriaceous dark shining green with the veins obscure, (when fresh) petioles $\frac{1}{2}$-1 inch long dilated near their insertion on to the stem ; male flowers numerous sessile or subsessile aggregated into dense short fascicles in the axils of the fallen leaves, stamens about 7 on each phalange, no vestige of an ovary ; female or hermathrodite flowers solitary in the axils of the fallen leaves, each phalange furnished with 2-3 anthers at the apex (apparently fertile), ovary 5-6 celled crowned with a large dilated 5-6 lobed stigma, fruit size of an apple. *Roxb. Fl. Ind.* ii. *p.* 633. Stalagmites pictorius, *G. Don.*

This very beautiful tree is very abundant in the woods in Coorg, but I have also met with it in Wynad, S. Canara, the western slopes of Nilgiris, and other localities in the western side of the Madras Presidency, and on the Bombay ghats ; and it is cultivated in gardens. The specimens figured were gathered below Sisparah on the Nilgiris. The tree yields a gamboge, but I do not know of what quality. I am not acquainted with the timber.

Gouvindoo. del. Dumphy lith.

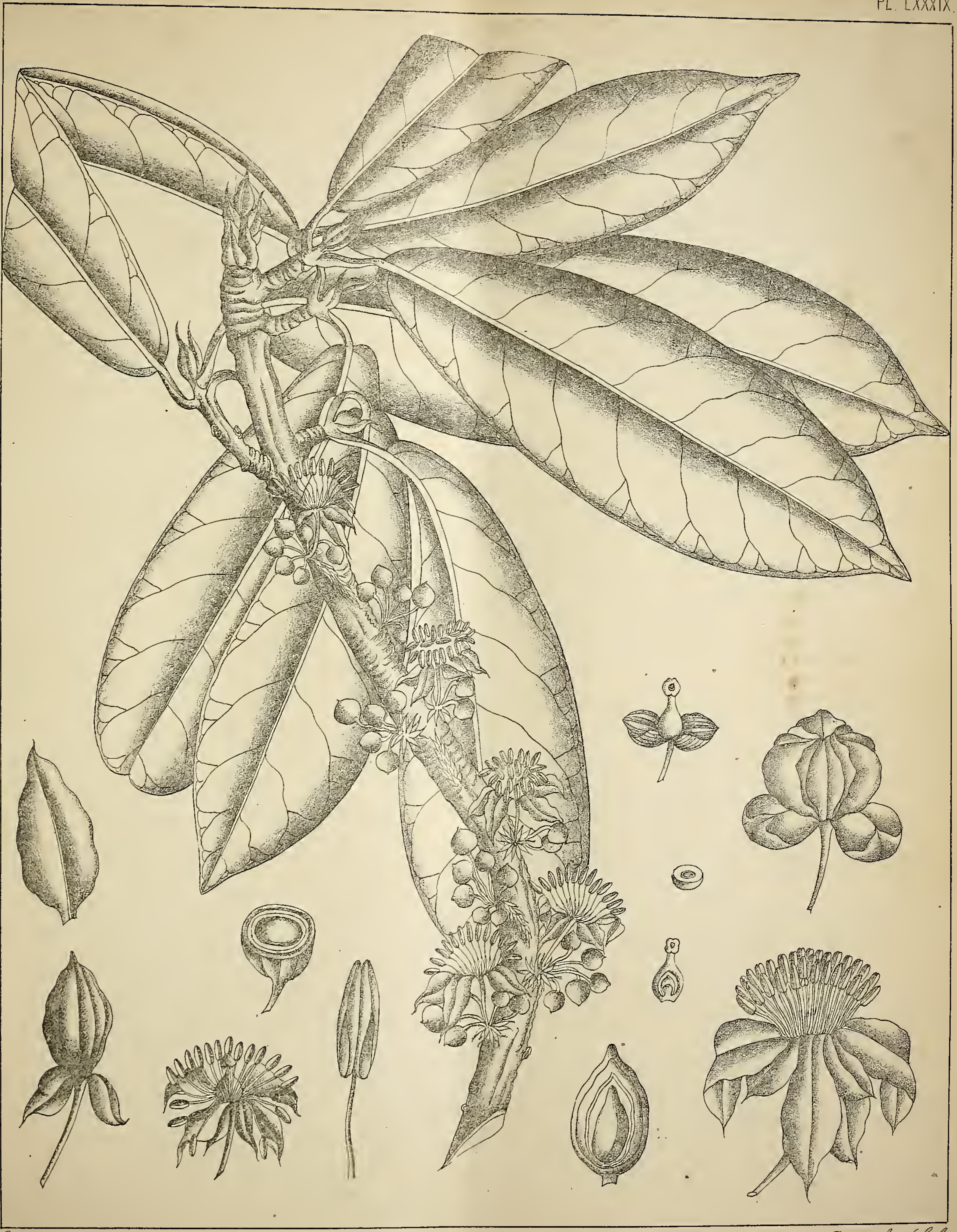
Xanthochymus pictorius (Roxb.)

OCHROCARPUS LONGIFOLIUS. (Nat. ord. Guttiferæ.)

OCHROCARPUS. *Thouars.*—GEN. CHAR. Flowers polygamous, calyx closed before flowering, at length opening in 2 valves or sepals, petals 4, stamens indefinite shortly connate below or free, filaments filiform, anthers erect oblong or linear dehiscing longitudinally, ovary 2 celled, style short thick, stigma large peltate slightly 2 lobed, ovules 2 in each cell, fruit baccate 1-4 seeded, seeds large, embryo of a large fleshy radicle (tigella) with the cotyledons reduced to a mammiliform projection or none. Trees, with opposite or ternately verticellate coriaceous leaves, and axillary fascicles of flowers. *Benth. and Hook. Gen. Pl.* 1. 980. Calysaccion, *Wight Ill.* 1. 130.

OCHROCARPUS LONGIFOLIUS. (Benth. & Hook.) A large tree, everywhere glabrous, young shoots terete or slightly 4 sided, leaves opposite or ternately verticellate oblong with a short blunt point, rounded or slightly attenuated at the base, hard thick and coriaceous, venation inconspicuous (but beautifully reticulated when dry), 6-10 inches long by 2-3½ broad, petioles ¼ inch long, flowers numerous in short fascicles congested on lateral tubercles springing from the axils of fallen leaves, peduncles short 1 flowered, fruit oblong falcate about one inch long by 5 lines in diameter. *Benth. and Hook. Gen. Pl.* i. *p.* 980. Mammea longifolia, *l. c. p.* 176. Calysaccion longifolium, *Wight Ill. p.* 130 ; *et Icones tab.* 1999. Calophyllum longifolium, *Wall. Cat.*

This tree is indigenous on the Malabar, Concan and Bombay ghats, and is cultivated in the Banglore gardens, Northern Circars and elsewhere; the tree is diœcious, or at least monœcious in a wild state, but becomes often hermathrodite when in cultivation. The tree flowers in March and April, and the flowers are white streaked with red; the globular flower buds are used for dyeing silk, and are dried and exported from the Bombay Presidency, where the male tree is called Woondy and the female Poone, both being also known under the name of Suringel or Gardoondy. I am not acquainted with the timber, but it is said to be used in house building.



Govindoo, del: Dumphy Lith:

Ochrocarpus longifolius (Benth & Hook)

CALOPHYLLUM WIGHTIANUM. (Nat. ord. Guttiferæ.)

For Gen. Char. see letter press to Pl. ii.

CALOPHYLLUM WIGHTIANUM. (Wall.) A middling sized tree, young shoots square glabrous, leaves oval obovate or rhomboid very obtuse at the apex, very firm coriaceous and shining 3-4 inches long by $1\frac{1}{4}$-$1\frac{1}{2}$ broad, petioles about 3 lines long, racemes few flowered shorter than the leaves, glabrous or when young slightly puberulous towards the base, peduncles about $\frac{1}{2}$ an inch long, rather slender furnished with a small boat shaped caducous puberulous bract at their insertions on the raceme, sepals 4, petals 0, stigma peltate entire. *Wall. Cat.* 4847. C. spurium, *Choisy in DC. Prod. vol.* 1. 562. C. caloboides, *G. Don.* C. apetalum, *Willd. Spr. Sys.* ii. 571. C. calaba, *L. in part.* C. decipiens, *Wight. Ill. p.* 128.

This tree is common near the banks of rivers on the western side of the Madras Presidency, and is called Kalpoon in S. Canara, where it is very common, and its timber is much esteemed; the specimens figured are from S.Canara, and unfortunately have no fruit, which is described by Dr. Wight as "small, oval, somewhat attenuated at both ends"; it was formerly described as having only 4 floral envelopes, viz. 4 sepals and no petals, but Dr. Wight says that he discovered 8. I have dissected a large quantity of buds and have never found more than 4; it is possible that the tree here figured differs from Dr. Wight's, but I believe it to be the apetalum of Willdenow. The timber is of a red color, very hard and heavy, and valuable for engineering purposes.

Pl. XC.

Wight del. Dumphy Lith.

Calophyllum Wightianum Wall.

TERNSTRÆMIA GYMNANTHERA. (Nat. ord. Ternstræmiaceæ.)

TERNSTRÆMIA. *Linn.*—GEN. CHAR. Flowers usually hermathrodite, sepals 5 much imbricate, petals 5 imbricate united at the base, stamens numerous adnate to the base of the corol, anthers glabrous basifixed, cells adnate, ovary 2-3 celled with 1-4 ovules suspended from near the apex of each cell, style simple with a broadly 2·3 lobed stigma, fruit thick and indehiscent, but rather dry, seeds 2-few large, horseshoe-shaped inside, albumen fleshy often thin or scarcely any, embryo much curved or folded longitudinally. Trees or shrubs, leaves coriaceous, peduncles 1-flowered axillary or lateral curved downwards with 2 bracteoles close to the calyx.

TERNSTRÆMIA GYMNANTHERA. (WA.) A middling sized tree, glabrous, leaves cuneate-obovate, obtuse or shortly and obtusely pointed coriaceous entire, peduncles twice as long as the petioles, bracteoles persistent, anthers dotted with little points on the connective without bristles. Cleyera gymnanthera, *WA. Prod. p.* 87. Ternstræmia, *Benth. and Hook.*

A common tree on the Nilgiris and other elevated mountains on the west side of the Presidency, from an elevation of about 4,000 *feet upwards, also in Ceylon; called Kaymonc on the Nilgilis. The wood is pinkish in color and much esteemed; it works well, but requires to be well seasoned; it is used for doors, rafters, and a variety of purposes.*

Alrois, del

Ternstroemia gymnanthera (W&A)

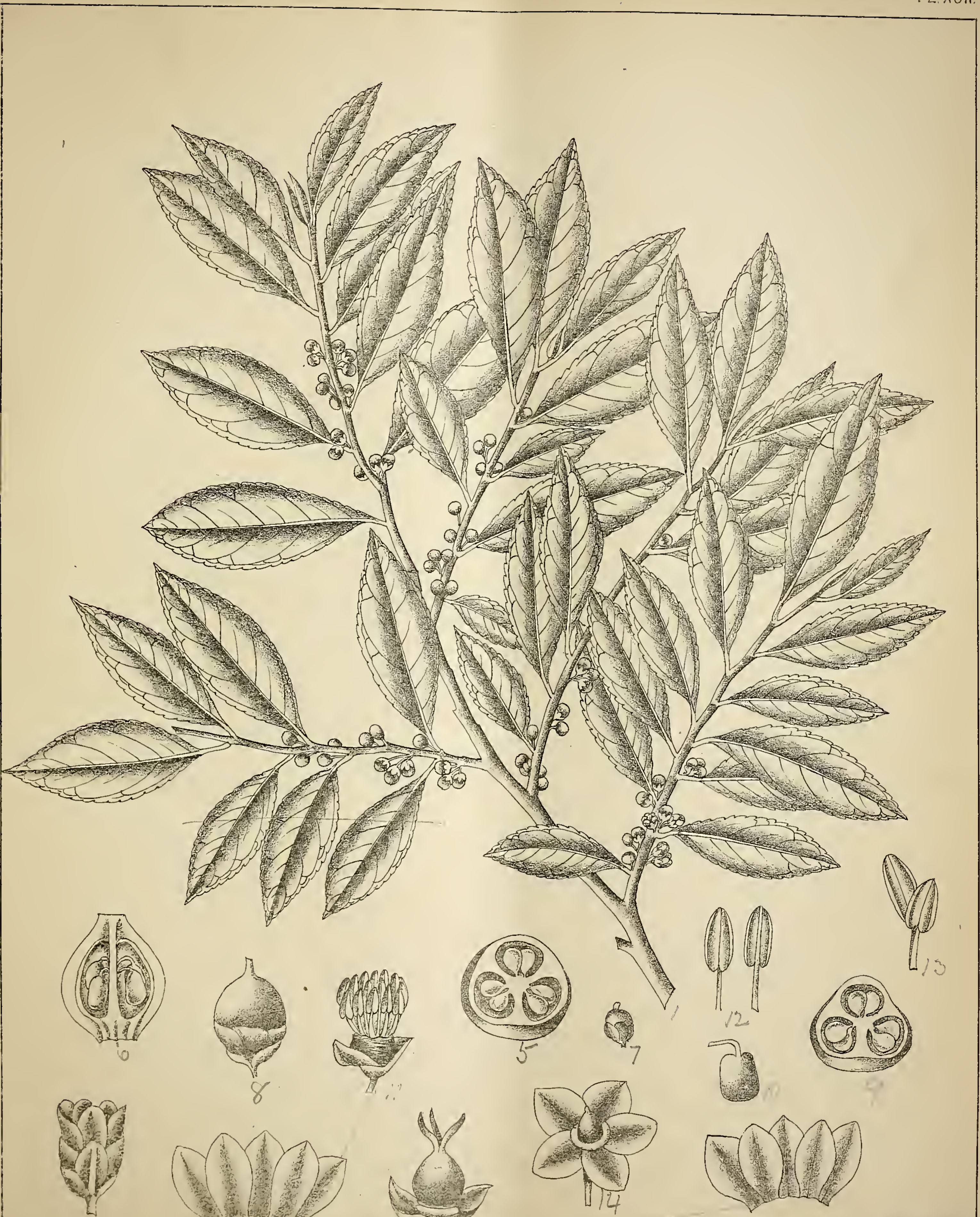
Dunphy, Lith.

EURYA JAPONICA. (Nat. ord. Ternstræmiaceæ.)

EURYA. *Thunb.*—GEN. CHAR. : Flowers mostly unisexual, sepals 5 much imbricate, petals 5 imbricate united at the base, stamens usually indefinite seldom above 15, anthers glabrous basifixed, cells adnate, ovary 3 (rarely 2-4-5) celled with several ovules in each, styles as many either almost free or united to near the top ; fruit a berry, embryo much curved in a somewhat graunlar albumen. Trees or shrubs, flowers very small axillary, fascicled on short pedicels, or sessile.

EURYA JAPONICA. (Thunb.) A small tree, branches glabrous or pilose, leaves glabrous obovate or oblong 1½-2 inches long, slightly crenulate narrowed at the base, pedicels axillary usually 2-3 together 1-1½ lines long, flowers about 2 lines in diameter white, styles 3 distinct or united to near the apex. *Thunb. Fl. Jap.* 191, *t.* 25. Eurya Wightiana, *Wall.* ;—*WA. Prod. p.* 86. E. fasciculata, *Wall.* E. tristyla, *WA. Prod. p.* 86. E. Ceylanica, *Wight Ill.* 1. 98. E. elliptica, membranacea et parviflora, *Gardner.*

Common on the western side of the Madras Presidency, principally on the mountains at the higher elevations, but also at low elevations, also in Ceylon and Northern India ; called Hoolooni on the Nilgiris, and Neyadasse in Ceylon. Timber of a light chocolate brown ; in leaf and general appearance it much resembles the tea plant, and I have seen it reared as such in tea plantations ; there is only one species in this Presidency, but it is a very variable plant.



Govindoo, del.

Eurya Japonica, (Thunb)!

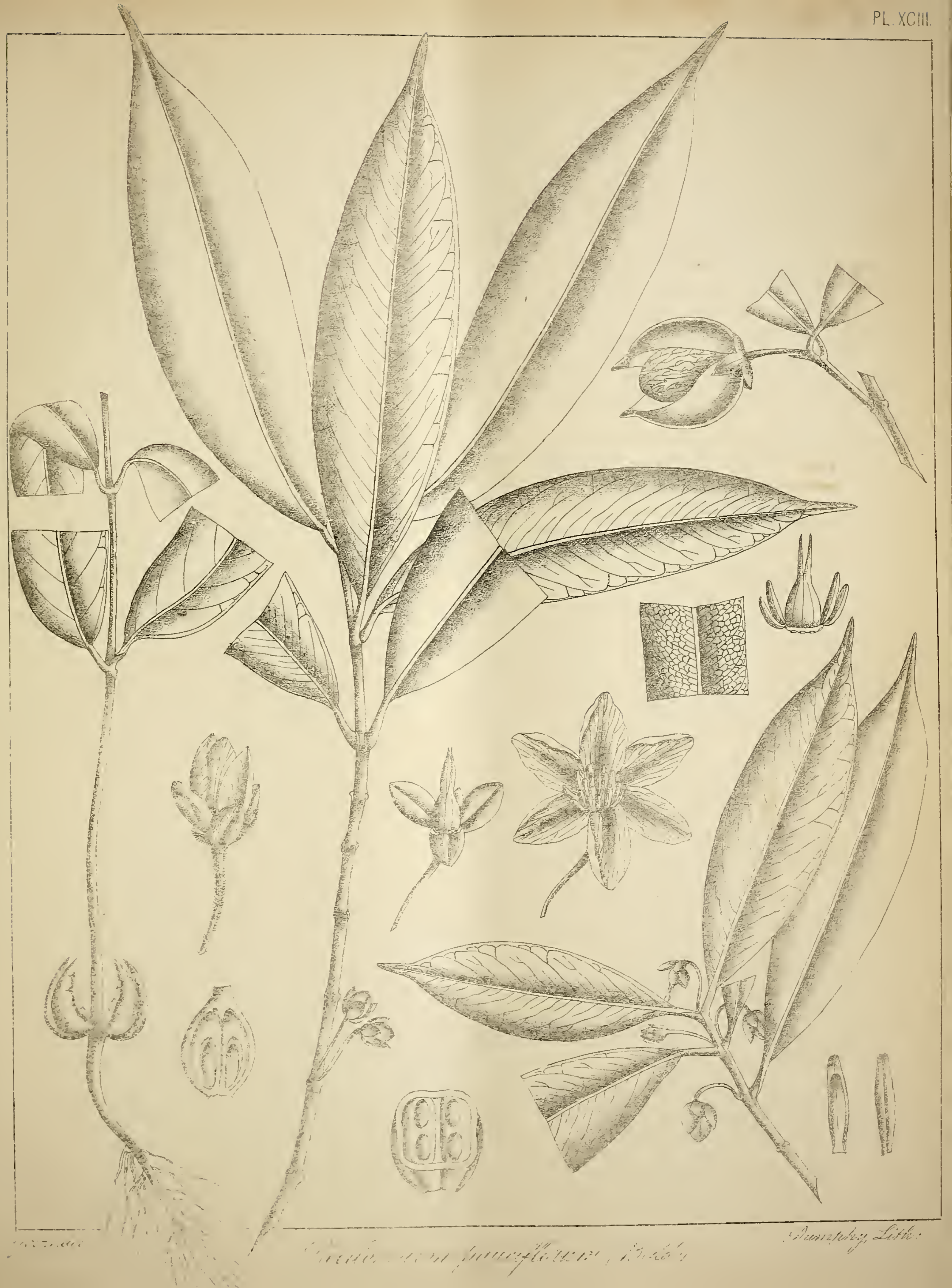
Dunphy, Lith.

PÆCILONEURON PAUCIFLORUM. (Nat. ord. Ternstræmiaceæ.)

For Gen. Char. see letter press to plate of P. Indicum, Pl. iii., and under the head of this genus in the Manual.

PÆCILONEURON PAUCIFLORUM. (Bedd.) A good sized tree, glabrous, leaves narrow lanceolate with a longish blunt acumination and attenuated at the base, 5-6 inches long by 1-1¼ broad, petioles 4-5 inch long, peduncles solitary or 2 together axillary or in the axils of the fallen leaves ½-¾ inch long, minutely puberulous, sepals 4 unequal puberulous on the outside, the 2 outer small, petals 6 imbricate, stamens 16-22 in two series inserted on to an evident disk below the ovary, styles 2, ovary 2 celled with 2 erect ovules in each cell, fruit globose pointed size of a large cherry dehiscent into 2 coriaceous valves, 1 celled, 1 seeded, seed hard round, testa loose membranaceous striated easily separable from the seed, cotyledons very large fleshy, albumen none.

Abundant on banks of rivers on the South Tinnevelly and Travancore mountains up to nearly 4,000 feet; called Pudangalli. It yields a valuable hard reddish timber, which is used for building and other purposes, and for walking sticks. In the plate a drawing is also given of a young seedling just after germination, showing the cotyledons and the loose testa attached.



Dunphy Lith:

DIPTEROCARPUS INDICUS. (Nat. ord. Dipterocarpeæ.)

DIPTEROCARPUS. *Gærtn.*—GEN. CHAR. Tube of the calyx, when in flower free, divisions unequal slightly imbricate when very young, but soon open or subvalvate, tube of the calyx when in fruit enlarging and enclosing the fruit, 2 of the divisions expanding into long erect wings, the other 3 small, stamens numerous, anthers linear entire, valves equal, connective acuminate or produced into a long beak, ovary 3 celled, cells 2 ovuled, style filiform entire or obsoletely 3 toothed, capsule woody indehiscent 1 rarely 2 seeded enclosed on the enlarged calyx, cotyledons very large fleshy unequal corrugately lobed or contortuplicate, radicle superior. Lofty trees, bearing resin, stipules large enclosing the bud at the apex of the branches early caducous, leaves coriaceous entire or sinuato-dentate, parallely penniveined and transversely venulose between the veins, flowers large in axillary few flowered racemes (Pterygium, *Corr in Ann. Mus. Par.* viii. 397.)

DIPTEROCARPUS INDICUS. (Bedd.) A lofty tree, everywhere glabrous except the stipules petals and ovary, leaves ovato-oblong with a short acumination, about 5 inches long by $2\frac{1}{2}$ broad, petioles $1\frac{1}{2}$-2 inches long, racemes axillary solitary a little shorter than the leaves 5-8 flowered, petals puberulous on the outside, anthers terminated with a long slender bristle, fruit about 1 inch in diameter not ribbed, wings about 5 inches long. *Bedd. in Conservator of Forests Report (Madras) for* 1864-65.

Common in all the ghat forests from Canara down to Cape Comorin, very abundant in S. Canara, where it is called Guga; its timber is very open in the grain and not durable, but is occasionally used for various purposes; the tree yields a wood oil, but it is, I believe, never extracted; the liquid balsam, like Copaiba sold in Trevandrum, and the produce of a tree from those ghats is extracted from the Hardwickia pinnata.

Govindoo, del;

Dipterocarpus Indicus (Bedd:)

Dumphy, Lith:

VATICA ROXBURGHIANA. (Nat. ord. Dipterocarpeæ.)

VATICA. *Linn.*—GEN. CHAR. Tube of the calyx very small adnate to the torus or base of the ovary, not or scarcely enlarging when in fruit; divisions rather acute, when very young imbricate but soon open or pseudo-valvate, enlarging with the fruit, equal or unequal and patent. Stamens 15, anthers oblong or linear rarely ovate, connective generally with a short apiculation, ovary 3 celled, cells 2 ovuled, style short with a clavate apex, or long subulate, stigma entire or 3 toothed, capsule thick woody indehiscent, or 3 valved 1-2 seeded. Trees, bearing resin, stipules small fugacious or inconspicuous, leaves entire coriaceous penniveined and reticulato-venose, flowers in axillary or terminal panicles.

Sec. I. Isauxis.—Enlarged divisions of the calyx equal, patent below the fruit.

Sec. II. Euvatica.—Enlarged divisions of the calyx very unequal wing like, patent below the fruit.

The 2 Southern Indian species both belong to Isauxis.

VATICA ROXBURGHIANA. (Wight.) A large tree, young branches petioles and inflorescence minutely furfuraceous, leaves glabrous above except the costa, which with the costa and veins beneath is slightly scaly, ovate to oblong with an obtuse point rounded or obtuse at the base, furnished with 10-14 primary veins on each side, 4-8 inches long by 2-3¼ broad, petiole 1¼-2 inches long, panicles axillary shorter than the leaves, branchlets few flowered, calyx and outside of petals furfuraceous, divisions of the former acute enlarging in fruit and then 5 nerved and glabrescent, petals 5 times as long as the calyx, stamens 15 in 2 rows, anthers oblong with a short apiculation, style nearly double the length of the anthers, stigma clavate obscurely 3 or 6 lobed, fruit globose not sulcated crowned with a small nipple-like point at the apex, rough with minute raised reticulations and furfuraceous, hard woody and indehiscent. *Wight Ill. p.* 88.

Common in some of our western coast forests, particularly in the South Canara jungles, and planted in avenues, &c. in Travancore, also indigenous in Ceylon, where it is called Mendora; its timber is much valued in Ceylon, but I have not seen it in use in India; the tree produces a gum-resin.

PL. XCV.

Alwrs, del. Dumphy, Lith.

Vatica Roxburghiana (Wight)

HOPEA WIGHTIANA. (Nat. ord. Dipterocarpeæ.)

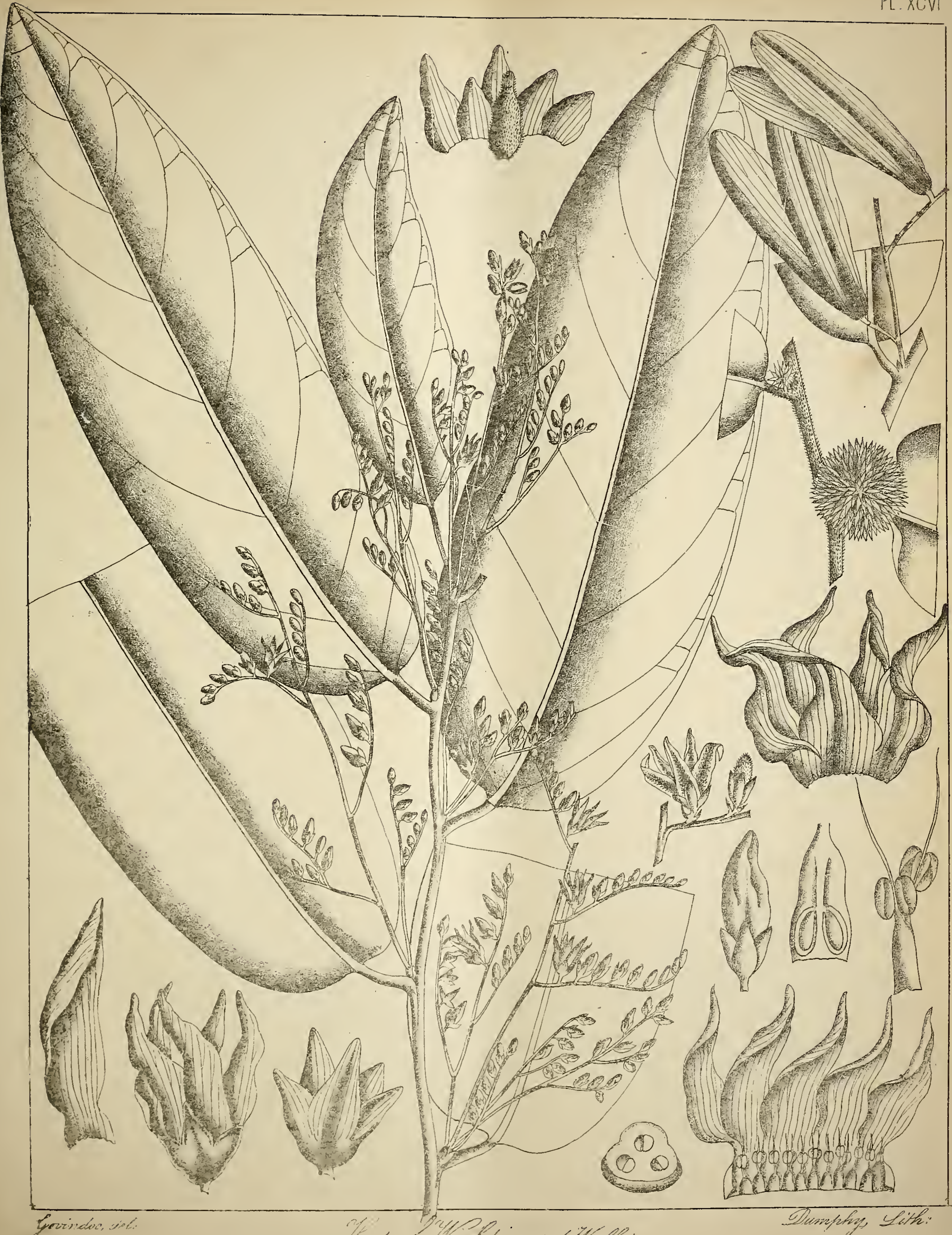
For Gen. Char. see under "H. parviflora," Pl. vi.

HOPEA WIGHTIANA. (Wall.) A large tree, young branches and petioles furnished with a dense short pubescence, leaves ovato-oblong, rounded at the base and attenuated towards the apex into a very obtuse point, glabrous on both sides except the costa above, primary veins distant 7-10 on each side of the costa, 6-9 inches long by 2-3 broad, petioles $\frac{1}{4}$-$\frac{1}{2}$ inch long, panicles glabrous axillary generally 3 together, shorter than or about the length of the leaves, flowers pink about $\frac{1}{2}$ an inch in length secund bracteolate at the base of their very short pedicels, calyx glabrous, corol hairy on the outside, stamens 15 alternately single and double, anthers terminated with a long bristle, fruit and calyx wings glabrous bright crimson colored, wings 2-2$\frac{1}{2}$ inches long by $\frac{1}{2}$ an inch broad, 7-9 nerved.—*Wall. L. N.* 6295 ;—*WA. Prod. p.* 85, and *Ill. tab.* 37—(wrong as to the 10 stamens.)

Vary. β. *glabra*, young branches and petioles glabrous or sub-glabrous. Hopea glabra, *WA. Prod. p.* 85.

This tree is very common in many of our western forests, an echinate excrescence, much like the young fruit of a Spanish chestnut, is often produced in the axils of the leaves ; it is probably the formation of some insect in the bud of the panicle, it is represented in the figure, a somewhat similar formation occurs in Hopea parviflora, as I have gathered specimens of the longer leaved variety in Tinnevelly with regular abortive panicles, several of the branchlets of each terminating with hard, round, warty, fruit-like excrescences 4 lines in diameter.

The timber is very valuable and very similar to that of Hopea parviflora. Variety β is the Kong of Tinnevelly, and is par excellence the timber of that district. I have not seen this more glabrous variety in fruit, but the flowers in no way differ from the ordinary form ; the latter is most abundant in the S. Canara district, where it is called Kalbow and Hiral bogi ; it is a first-rate coppice firewood, and large tracts in this state are met with in the plains of that district never apparently flowering, but abundantly covered with the abortive fruit-like excrescence.



Govindoo, del. Dumphy, Lith:

Hopea Wightiana. (Wall.)

DOONA ZEYLANICA. (Nat. ord. Dipterocarpeæ.)

DOONA. *Thw.*—GEN. CHAR. Tube of the calyx in flower very short adnate to the torus, divisions imbricate, in fruit the tube not enlarging, 3 of the divisions enlarging into large erect wings ; 3 small, all connivent at the base round the fruit, stamens 15, anthers oblong with the cells equal, connective produced into a terminal process, ovary 3 celled, cells 2 ovuled, style subulate, stigma small, fruit indehiscent generally 1 seeded, seed ovoid, cotyledons extremely contortuplicate, radicle superior.

Glabrous trees, resiniferous, stipules small deciduous or inconspicuous, leaves entire coriaceous penninerved, panicles axillary or terminal, flowers rather small.—*Thw. Hook. Kew. Journ.* iv. *p.* 7 ;—*Benth. and Hook. Gen. Pl. p.* 193.

DOONA ZEYLANICA. (Thw.) A lofty tree, trunk straight, much branched towards the upper part, bark rough and cracked, branches terete and smooth, leaves penniveined with numerous intermediate reticulations lanceolate dark-green above, paler beneath, rounded at the base, tapering towards the apex into a rather long acumination with an abrupt point, 2-2¼ inches long by ¾ of an inch wide, petioles ½ inch long grooved along the upper surface, panicles furnished with small brown deciduous bractes, calyx pale-green tinged with red, the 3 enlarged leaves becoming a deeper red, petals pale rose darker at the tips, filaments united about ½ way up. *Thw. l. c.*

This is the famous Doon tree of Ceylon, called also shingle tree by the planters; it is very abundant in the Central Provinces of that island up to 4,000 *feet elevation, and the timber is highly prized for building purposes and for shingles; the tree yields a large quantity of colorless gum-resin from its trunk and branches, which when dissolved in spirits of wine or turpentine makes an excellent varnish.*

jovinadoo del. Dumphy. Lith.

Doona Zeylanica. (Thw:)

DOONA GARDNERI. (Nat. ord. Dipterocarpeæ.)

For Gen. Char. see letter press to Pl. xcvii.

DOONA GARDNERI. (Thw.) A lofty tree, leaves ovate or ovato-lanceolate, rounded at the base tapering into a longish point at the apex, 2-3½ inches long by 1½-2 inches broad, petioles about ¾-1 inch long, flowers drooping about ½ an inch across, bractes small early caducous, calyx minutely puberulous or at length glabrous, corol densely pubescent on the outside. *Thw. En. Pl. Zey. p.* 35.

This beautiful tree is found in the Central Provinces of Ceylon at 3,000 *to* 5,000 *feet elevation.*

Gonndoo del.

Dunphy Lith

Doona Gardneri (Thw.)

STEMONOPORUS GARDNERI. (Nat. ord. Dipterocarpeæ.)

STEMONOPORUS. *Thw.*—GEN. CHAR. Calyx 5 parted, divisions equal not enlarging in fruit, petals 5 equal, æstivation convolute, stamens 15 in 2 series, 5 interior and 10 exterior, monadelphous on a short ring round the base of the ovary, anthers oblong introrse dehiscing by a pore at the apex, connective not produced beyond the anther, ovary 3 celled, cells 2 ovuled, ovules pendulous from the apex of the axis anatropal, style filiform, stigma simple, fruit spherical $\frac{3}{4}$-1 inch in diameter with the calyx reflexed beneath it, 1 celled by abortion, irregularly dehiscing, testa membranaceous, embryo exalbuminous, cotyledons thick plicato-convolute. Trees like Vateria, but differing in their fewer anthers arranged only in 2 series. *Thw. Hook. Journ. of Bot. Vol.* vi. *p.* 3. Vateria *(in part) Benth. and Hook. Gen. Pl. p.* 194. Vatica *(in part) DC. Prod.* xvi. *p.* 620.

STEMONOPORUS GARDNERI. (Thw.) A large forest tree, leaves oblong-lanceolate or ovate acuminate, rounded at the base or subcordate, prominently veined beneath, $3\frac{1}{4}$-6 inches long by $1\frac{1}{2}$-$2\frac{1}{4}$ broad, petioles about 1 inch long, panicles slightly hoary numerous at the apex of the branchlets, more or less elongate 4-12 flowered, pedicels 3-4 lines long, flowers about $\frac{3}{4}$ inch across in expansion. *Thw. l. c. and En. Pl. Zey. p.* 38.

Ceylon, in the Central Provinces at about 5,000 *feet elevation.*

Govindoo del.

Dumphy, Lith.

Stemonoporus Gardneri (Thw.)

STEMONOPORUS ACUMINATUS. (Nat. ord. Dipterocarpeæ.)

For Gen. Char. see letter press to Pl. xcix.

STEMONOPORUS ACUMINATUS. (Thw.) A large tree, branches moderately rugose, leaves narrow lanceolate to oblong lanceolate gradually attenuated into a long blunt point, rounded at the base, prominently veined and reticulato-venose, 4-7 inches long by $\frac{3}{4}$-2 inches broad, petioles $\frac{3}{4}$-$1\frac{1}{2}$ inches long, stipules falcato-lanceolate 3 lines long $\frac{1}{2}$ line broad, early caducous, panicles puberulous about $\frac{1}{2}$ the length of the leaves, racemiform or moderately ramous, bractes miuute deciduous, calyx lobes ovato-lanceolate puberulous. *Thw. En. Pl. Zey. p.* 403.

Ceylon, in the Ambagamwa, Badulla and Mahamahanewera districts at no great elevation.

Govindoo Del.

Dumphy, Lith.

Stemonoporus acuminatus, (Thw.)

MONOPORANDRA CORDIFOLIA. (Nat. order Dipterocarpeæ.)

MONOPORANDRA. *Thw.*—GEN. CHAR. Calyx 5 parted divisions equal not enlarging in fruit, petals 5 equal æstivation convolute, stamens 5 monadelphous in one series in a short ring round the base of the ovary, the rest as in Stemonoporus. *Thw. Hook. Jour. of Bot. vol.* vi. *p.* 5;—*Benth. and Hook. Gen. Pl. p.* 194;—*DC. Prod.* xvi. *p.* 637.

MONOPORANDRA CORDIFOLIA. (Thw.) A middling sized, much branched tree, leaves shining rigid very coriaceous ovate or oblong with a very sudden long blunt acumination, rounded but scarcely cordate at the base, costa and primary veins very prominent beneath depressed above, $2\frac{1}{2}$-$4\frac{1}{2}$ inches long by $1\frac{1}{4}$-$2\frac{1}{4}$ inches broad, petioles $\frac{1}{2}$ to nearly 1 inch long, panicles much shorter than the leaves, slightly puberulous, flowers very small, calyx segments very acute, fruit small size of a large pea. *Thw. En. Pl. Zey. p.* 39.

Ceylon, in the Ambagamwa and Saffragram districts, at an elevation of about 3,000 *feet.*

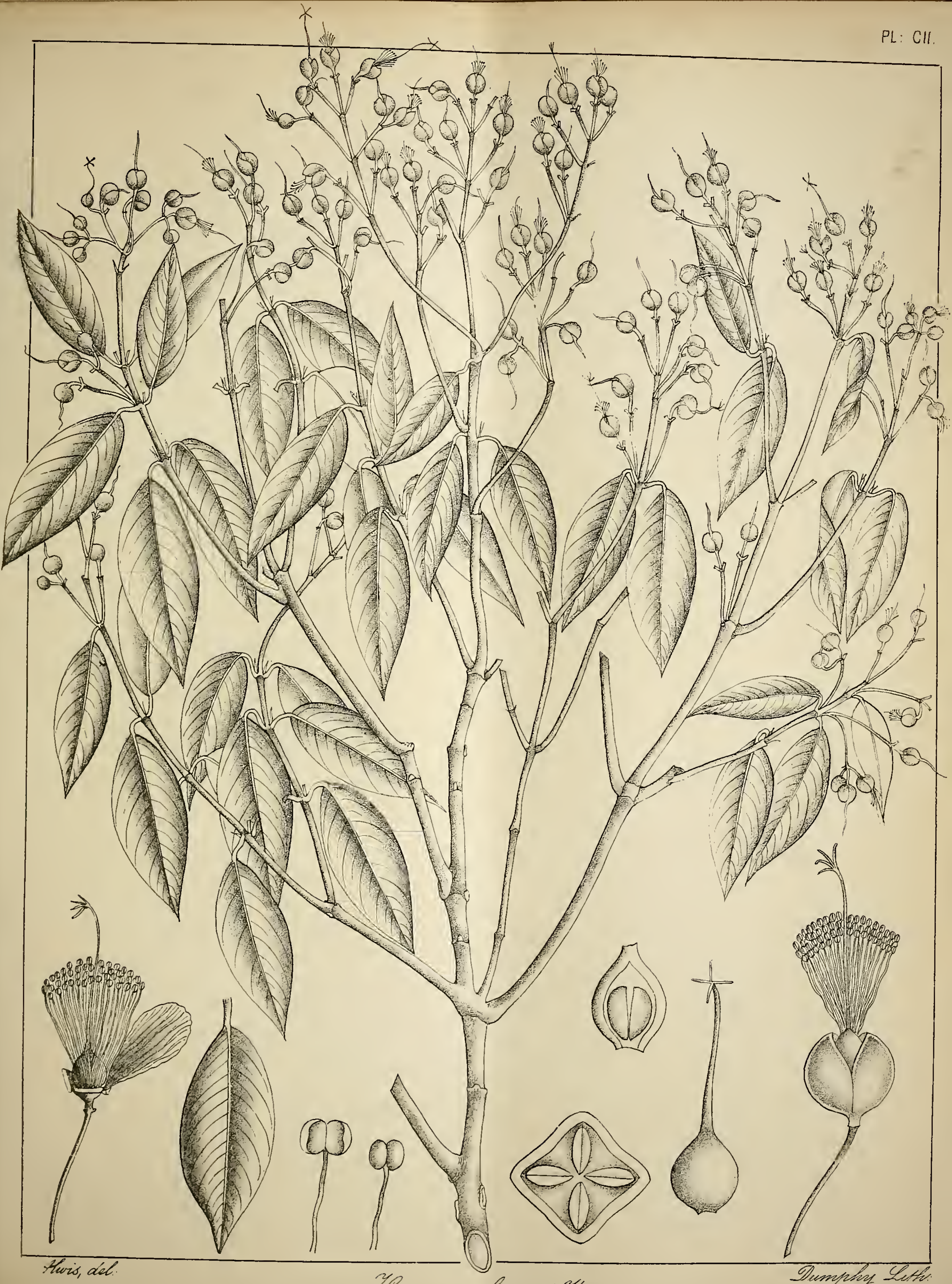
Govindoo, del. *Monoporandra cordifolia (Thw:)* Dumphy Lith.

KAYEA STYLOSA. (Nat. order Guttiferæ.)

KAYEA. *Wall.* —GEN. CHAR. Flowers hermathrodite (or polygamous ?), sepals 4 petals 4, stamens numerous free or scarcely united at the base, filaments long filiform, anthers small subglobose 2 celled dehiscing longitudinally, ovary 1 celled, style elongate shortly and acutely 4 cleft at the apex, ovules 4 erect, capsule roundish coriaceous indehiscent included in the much enlarged coriaceous calyx 1-4 seeded, testa membranaceous colored, cotyledons fleshly. Trees, leaves oblong penninerved, flowers numerous small in terminal panicles or solitary and large.

KAYEA STYLOSA. (Thw.) A large tree, branches terete glabrous reddish, leaves ovato-lanceolate acuminate, 2-3 inches long by 7-10 lines broad, petiole 2-3 lines long, flowers very fragrant small in terminal panicles or from the upper axils, style much longer than the numerous stamens. *Thw. En. Pl. Zey. p.* 50.

This elegant tree has only been found in Ceylon, in the south of the island at no great elevation; it is called Soovanda by the Singhalese. The timber is valued for building purposes.



Hwis, del.

Dumphy Lith.

Kayea stylosa. (Thw:)

DILLENIA SPECIOSA. (Nat. order Dilleniaceæ.)

DILLENIA. *Linn.*—GEN. CHAR. Sepal 5 patent, petals 5 large, stamens free or nearly so, anthers adnate linear dehiscing by two fissures, interior erect introrse, exterior recurved extrorse, carpels 5-20 many ovuled and crowned by as many radiating styles united round a central conical axis into a spurious berry enclosed in the calyx, seeds immersed in pulp or without pulp. Trees, leaves very large prominently parallely nerved, flowers large solitary or fascicled white or yellow.

DILLENIA SPECIOSA. (Thunb.) A good sized tree, trunk straight but of no height, branches numerous spreading, then ascending, forming a dense head, leaves about the extremities of the branchlets approximated short petioled oblong or lanceolate acute, most regularly serrate, very coriaceous with the veins very prominent excurrent at the points of the serratures, 9-12 inches long by about 4 inches broad, petioles 1-2 inches long, channelled, embracing half the circumference of the branchlet and leaving a permanent scar after falling off, peduncles generally one towards the extremity of each branchlet clavate round smooth about 3 inches long, 1 flowered, flowers very large white fragrant, anthers opening by 2 fissures forming a large yellow globe in the centre of the flower, which is crowned by the white lanceolate spreading stigma, carpels about 20, styles scarcely any, stigmas linear-lanceolate recurved, fruit 3-4 inches in diameter, seeds in pulp, numerous reniform or obliquely oval very hairy. *Thunb. Linn. Trans.* 1. 200 ;—*Roxb. Fl. Ind.* iii. 650. Dillenia elliptica, *Thunb. Trans.* 1. 200. Syalita, *Rheed. Mal.* iii. *t.* 38, 39.

One of the handsomest trees in India, it is found in dense forests at no great elevation in Malabar, the Northern Circars, Orissa, the Godavery forests, in various parts of Northern India; Bombay, Ceylon, Birmah, and in the Malay Peninsula ; it is called Chaltà in Hindustanee, and Uva and Pedda Kalingà in Telugu ; it is much cultivated, particularly by natives about temples ; the wood is hard and tough, and used to make gun stocks and for boats, and is said to be very durable under water. The ripe fruit is eaten by natives in curries, and makes a tolerable jelly, and added to syrup is used as a cough mixture; it has rather a disagreeable odour. The tree is called Mota Kurmal in the Mahratta country, Hondapara in Ceylon, and Kaloonoot in Birmah; the timber weighs 44 lbs. the cubic foot when seasoned, and 55—60 when unseasoned, and its specific gravity is ·704.

The unexpanded bud in the plate is from a drawing made in the Ceylon Herbarium, and the full flower and analysis from Dr. Wight's plate.

Govindoo del. Dumphy Lith.

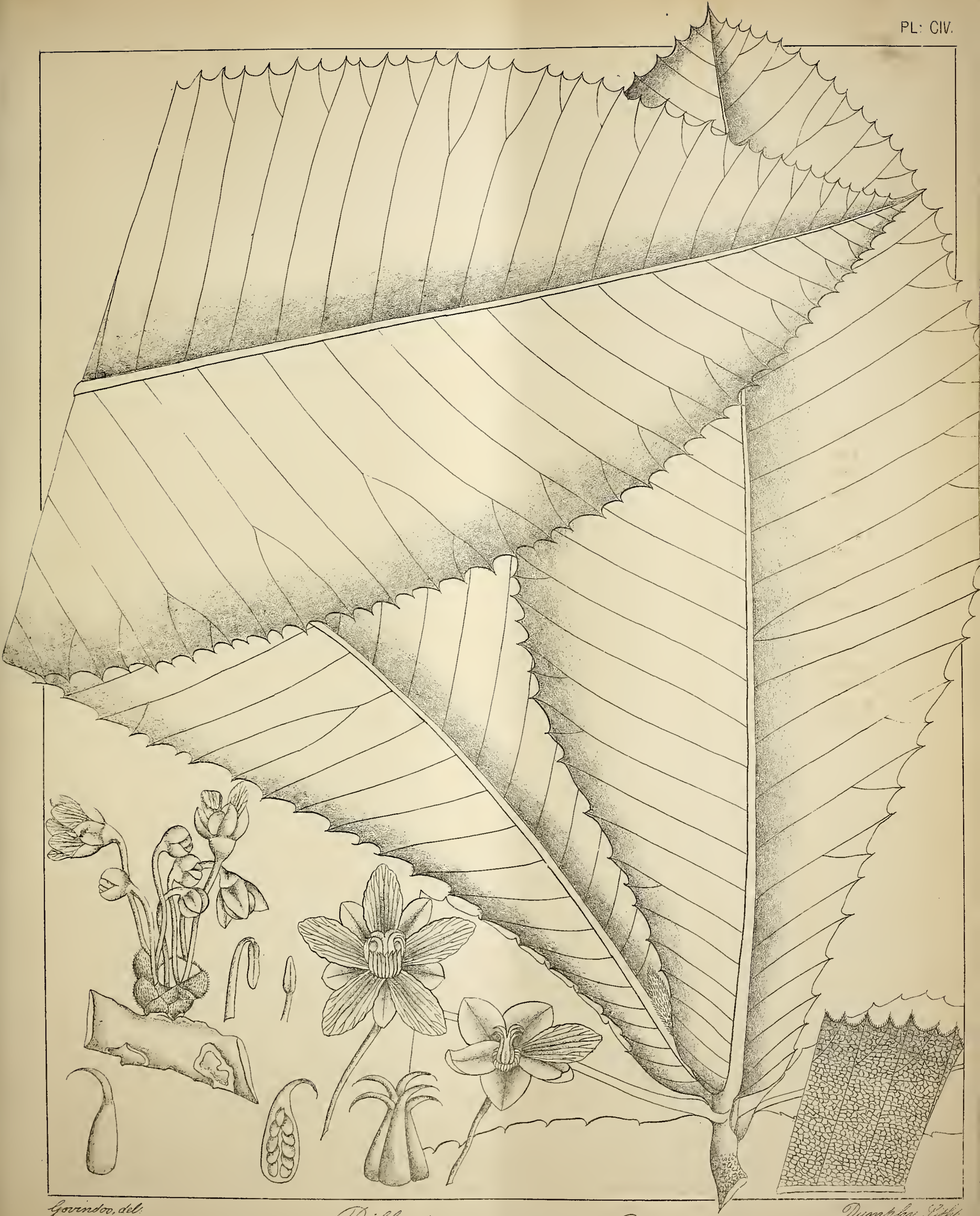
Dillenia speciosa (Thunb.)

DILLENIA PENTAGYNA. (Nat. order Dilleniaceæ.)

For Gen. Char. see letter press to Pl. ciii.

DILLENIA PENTAGYNA. (Roxb.) A very large tree, leaves quite sessile and amplexicaul at the base or with petioles 1-4 inches long, oblong to oblongo-lanceolate or obovate acute or obtuse at the apex, 1-2 feet long (or in saplings up to 5 feet long) paler beneath, when adult very coriaceous glabrous or puberulous beneath, when young membranaceous and more or less pilose or sericeous according to age and ciliate at the margin, very prominently veined with raised parallel veins which are simple and excurrent at the margin into a sharp serrature or once or twice forked (generally only towards the apex) each veinlet ending in a serrature, flowers $\frac{1}{2}$-$\frac{3}{4}$ inch in expansion appearing before the leaves in small clusters along the older branches, pedicels 5-8, one-two inches long arising from several small concave thick silky bractes, sepals unequal the 3 outer ovate the 2 inner longer and narrower, petals oblong to obovate yellow very caducous, stamens numerous the interior row longer than the other and reflexed like the styles, ovaries 5, styles reflexed, stigmas simple apiculate, seeds by abortion 1-2. *Roxb. Fl. Ind.* ii. 652. Dillenia augusta et pilosa, *Roxb. l. c.* Colbertia Coromandelina, *DC. Prod.* 175.

This tree is most abundant throughout South India and in Northern India and Birmah, but does not occur in Ceylon ; it is to be met with in almost every forest in this Presidency. It flowers towards the end of January, or as late as March or April, when the tree is destitute of leaves. It is called Rāi, Pine and Nāi-tek in Tamil in different districts, Chinna Kalingá in Telugu, Kanagalee and Machil in Canarese, and in Birmah Yeengā and Bjooben. The wood is close grained, strong, tough, fibrous and durable even under ground, of a reddish brown colour and a pretty wavy surface on one side, not easily worked and subject to warp and crack ; a cubic foot unseasoned weighs 85—90 *lbs., and* 70 *lbs. when seasoned ; its specific gravity is* 1·120 *; it is used in house and ship building, and is adapted for cabinet purposes.*



Govindoo, del.

Dillenia pentagyna, (Roxb.)

Dumphy, Lith.

STERCULIA. Linn. (Nat. order Sterculiaceæ.)

GEN. CHAR.: Flowers unisexual or polygamous. Calyx more or less deeply 5 cleft, rarely 4 cleft, usually colored. Petals none. Staminal column adnate to the gynophore, bearing at the summit 15 or rarely 10 stamens, irregularly clustered in a head. Carpels of the ovary 5, distinct or nearly so, with two or more ovules in each. Styles united under the peltate or lobate stigma. Fruit carpels distinct, spreading, either firm or woody, and scarcely opening along the inner edge, or thinner, and opening as follicles, even long before they are ripe. Seeds 1 or more in each carpel, rarely winged; albumen adhering to the cotyledons, often splitting in two, assuming the aspect of fleshy cotyledons; real cotyledons flat or nearly so, and thin, the radicle next the hilum or at the opposite end, or intermediate. Trees, leaves undivided or lobed, or digitately compound. Flowers in panicles or rarely racemes, mostly axillary, sometimes very short; terminal flowers usually female, in these the staminal column is shorter and the anthers less perfect than in the males, surrounding the base of the ovary; in the males the ovary is often entirely abortive.—Brachychiton, Trichosiphon, *and* Pœcilodermis, *Schott*; Delabechea, *Lindl.*; Cavallium, *Schott.*; Southwellia, *Salisb.*; Firmiana, *Mars.*; Pterygota, *Schott.*; Hildegardia, *Schott.*; Carpophyllum, *Miq.*; Scaphium, *Schott.*; Pterocymbium, *Br.*; Triphaca, *Lour.*

STERCULIA GUTTATA. A large tree, with a tolerably straight trunk, bark cracked, leaves oblong to very broad ovate slightly cordate at the base entire with a longish sudden acumination, upper side smooth and shining, beneath very softly villous, about 7-9 inches long by 4-5 broad, petioles round downy 2-5 inches long, stipules ensiform early caducous, racemes terminal and from the divisions of the branchlets simple densely villous, flowers in threes, very shortly pedicelled about ¾ inch across, chiefly hermathrodite, bractes lanceolate, a larger one below the middle flower and a very minute one below each of the others, calyx densely villous on the outside, hairy within and beautifully freckled with purple, ovary long pedicelled globose 3-5 lobed downy 3-5 celled, fruit carpels generally 5 coming to maturity semi-ovate, about 3 inches long by 2 broad, villous of a brilliant red color; seeds oblong jet black. *Roxb. Fl. Ind.* iii. 149.

A very common tree in almost every forest in Southern India and in Ceylon; it is a beautiful object when covered with its bright red capsules; the timber is not used that I am aware of, but the bark yields a valuable cordage, and is also made into a kind of clothing in some parts of the western coast: for this purpose it is taken off in strips, beaten, washed, and dried in the sun; the tree is called Kāwillee by the Kaders on the Anamallays, and Kukar and Goldar on the Bombay ghats.

Govindoo, del. Dumphy, Lith.

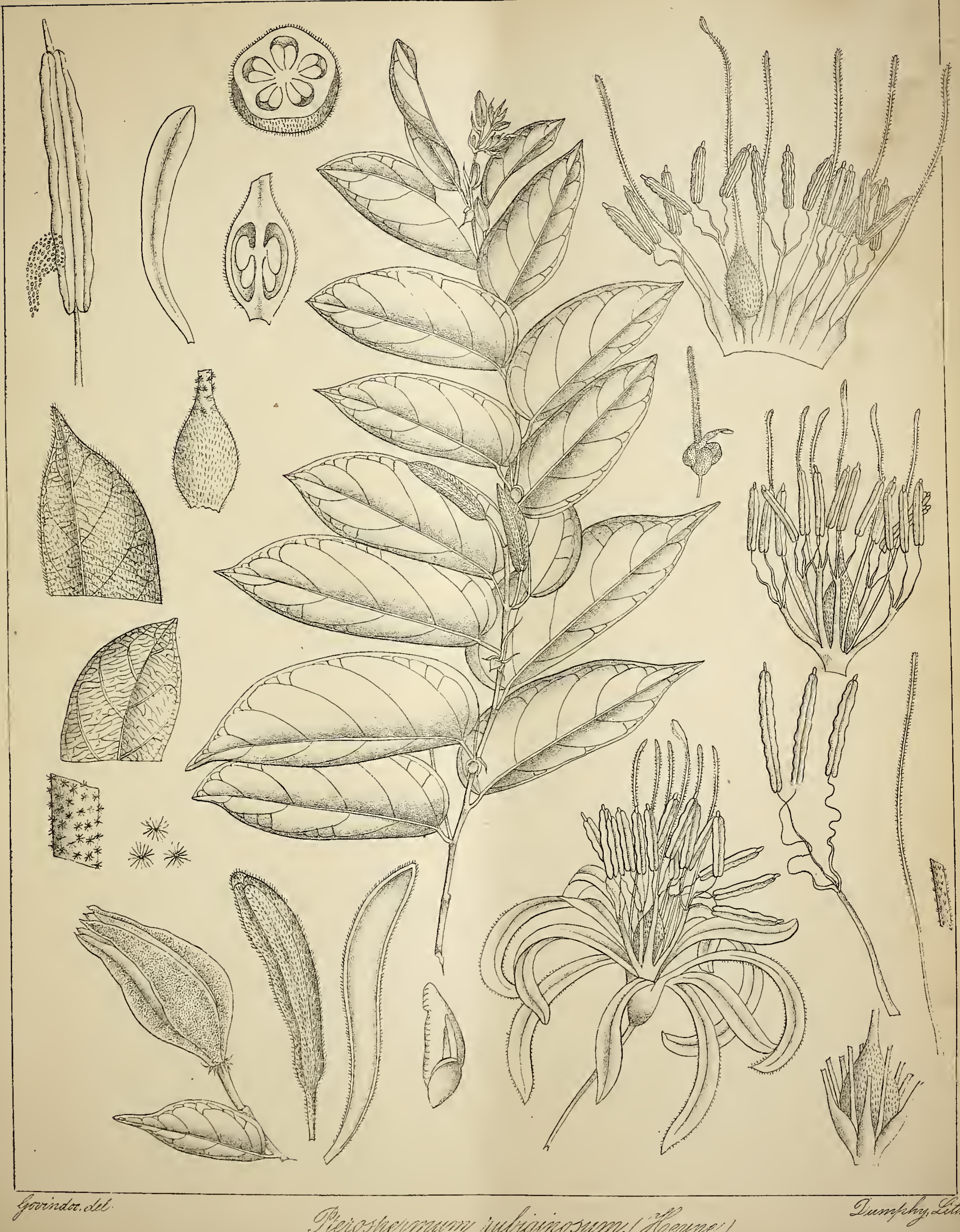
Sterculia guttata, (Roxb.)

PTEROSPERMUM. Schreb. (Nat. order Sterculiaceæ.)

GEN. CHAR.: Calyx tubular 5 lobed, petals 5, stamens united into a column at the base with 5 long barren filaments, and 15 shorter ones (in 5 phalanges of 3 each) each bearing a linear erect 2-celled anther, ovary shortly stalked 5 celled with several ovules in each cell, style entire, capsule woody with a loculicidal dehiscence, seeds winged at the upper end, albumen scarcely any. Trees, with a stellate or scaly pubescence, leaves coriaceous, flowers usually large solitary or few together on axillary peduncles.

Pterospermum rubiginosum. (Heyne). A very large tree, young branches covered with brownish rusty tomentum, leaves very obliquely ovate very unequal sided, quite entire acuminate, upper side covered with fugacious rusty down at length quite glabrous, under side softly downy, with close set brown tomentum, 2-2½ inches long by about 1 inch broad, petioles about 2 lines long, stipules downy with a broad concave base and 1-2 filiform teeth, peduncles axillary 1 flowered 2-3 times longer than the petioles furnished at the base with a few bractes resembling the stipules, flower bud angled stellately downy on the outside, bracteoles of the calyx none, flowers about 2 inches long, white, sepals and petals narrow linear, connective of the anthers produced into a terminal point, stigma obscurely 5 lobed, capsule ovate pointed 5 angled covered with stellate down, 2 inches long by about ¾ inch in diameter.—*WA. Prod. p.* 68.

This very fine tree is very common in the Tinnevelly districts, the Wynad, Anamallays, and generally throughout our western forests up to about 3,000 *feet; the timber is excellent, and the tree is called Kara toveray in Tinnevelly, where the wood is much in use for building and other purposes.*



Govindoo. del.

Pterospermum rubiginosum. (Heyne.)

Dunphy, Lith.

GUAZUMA TOMENTOSA. (Nat order Sterculiaceæ.)

GEN. CHAR.: Calyx 2-3 parted, petals 5 subunguiculate at the base cucullato-concave produced at the apex into a linear ligulate bifid appendage, staminal tube or urceolus with 5 sterile acute lobes alternate with the petals, in the sinuses of which are the fertile filaments (each opposite to a petal) connate at the base and trifid above each bearing 3 anthers, ovary sessile 5 lobed 5 celled, cells many ovuled, styles 5 more or less connate, stigmas simple, capsule subglobose woody tuberculoso-muricate or echinate with long hairs, imperfectly loculicidally 5 valved at the apex, seed albuminous, embryo slightly curved, cotyledons plaited, radicle near the hilum. Trees stellately pubescent or glabrescent, leaves unequally toothed often oblique, cymes axillary shortly pedunculate, flowers small. Diuroglossum, *Turcz.*

GUAZUMA TOMENTOSA. (DC.) A middling sized tree, leaves ovate oblong acuminate cordate and unequal at the base toothed, upper side stellately pubescent, under with a stellate white tomentum, about 3-4 inches long by 1¼ broad, petioles 3-4 lines long. *DC.* 1. 485. Boubroma tomentosa, *Spr.* Guazuma ulmifolia, *Wall.*

This tree has been naturalized in India, being of American origin; it is now very common throughout the Presidency, being largely planted in avenues and topes, &c. The wood, which is known as Bastard Cedar, is light and loose grained, and of a light brown color, and is used for furniture, and by coach makers for pannels, and for packing cases, pannelling, &c. It weighs about 40-45 *lbs. per cubic foot unseasoned, and* 32 *lbs. when seasoned, and its specific gravity is* ·512 *; the leaves are an excellent fodder for cattle.*

Alvis, del.

Guazuma tomentosa. (D.C.)

Dunphy, Lith.

GREWIA. Linn. (Nat. order Tiliaceæ.)

GEN. CHAR. : Flowers regular hermathrodite pentamerous, sepals distinct, petals unguiculate, claw thickened glandular ciliate, rarely wanting, stamens indefinite all fertile free springing from a raised glandular torus, ovary 2-4 celled, cells 2-many ovuled, style subulate, stigma shortly 2-4 lobed, drupe 1-4 stoned entire or lobed, stones 1-2 or more seeded and divided by spurious dissepiments between the seeds, seeds ascending or horizontal, albumen fleshy or horny, cotyledons flat leafy. Trees or shrubs, frequently covered with stelliform hairs, leaves entire or lobed 3-7 nerved, flowers yellow or pink in axillary or terminal cymes. Mallococca et Chadara, *Forsk.* Microcos, *Linn.* Omphacarpus, *Korth.*

GREWIA TILIÆFOLIA. (Vahl.) A large tree, the younger parts covered with a short dense coating of felted hairs, at length sub-glabrous, leaves obliquely cordate roundish, acuminate or rounded at the apex irregularly toothed sometimes with a tendency to be lobate at the apex, 4-6 inches long by 2-4 broad, 5 nerved at the base, petioles about 1 inch long, stipules transverse falcate lanceolate caducous, peduncles axillary or emerging a little on one side of the petiole, 2-3 together equal to or a little exceeding the petioles, 3-5 flowered, pedicels furnished with bracts, sepals linear oblong, petals oblong ½ the length of the sepals, torus scarcely exceeding the glands, style about twice as long as the stamens, stigma 4 lobed, drupes globose or 2-rarely 4 lobed, lobes globose with two hemispherical 3 celled nuts or one spherical 6 celled nut in each lobe. *Vahl. Symb.* 1. *p.* 35 ;—*Roxb. Fl. Ind.* ii. *p.* 587. G. arborea, *Roxb.* G. elastica, *Royle ?* H. zeyl. No 208

A very common tree throughout the Madras Presidency and all over India and Ceylon ; it ascends the mountains to about 4,000 *feet, and is often found of large size in favorable localities; the berries are eaten, having an agreeable acid flavour ; the timber is highly prized for strength and elasticity, and is used for building purposes, bows, buggy shafts, walking sticks, and a variety of other uses; it is much in use at Jubbulpore, where the tree is known by the name of Dhâman, it is light and rather soft, flexible and fibrous, coarse grained and durable, of a light pinkish color turning to light brown, and easily worked ; unseasoned it weighs* 45 *to* 50 *lbs the cubic foot, and* 34 *lbs when seasoned, its specific gravity is* ·544. *The tree is called Tharrà or Thadà in Tamil, Charàchi in Teligu, Thadsal or Butale in Canarese; the leaves make a good fodder, and the bark (like that of all the Grewias) is used as cordage.*

Govindoo del.

Grewia tiliæfolia, (Vahl.)

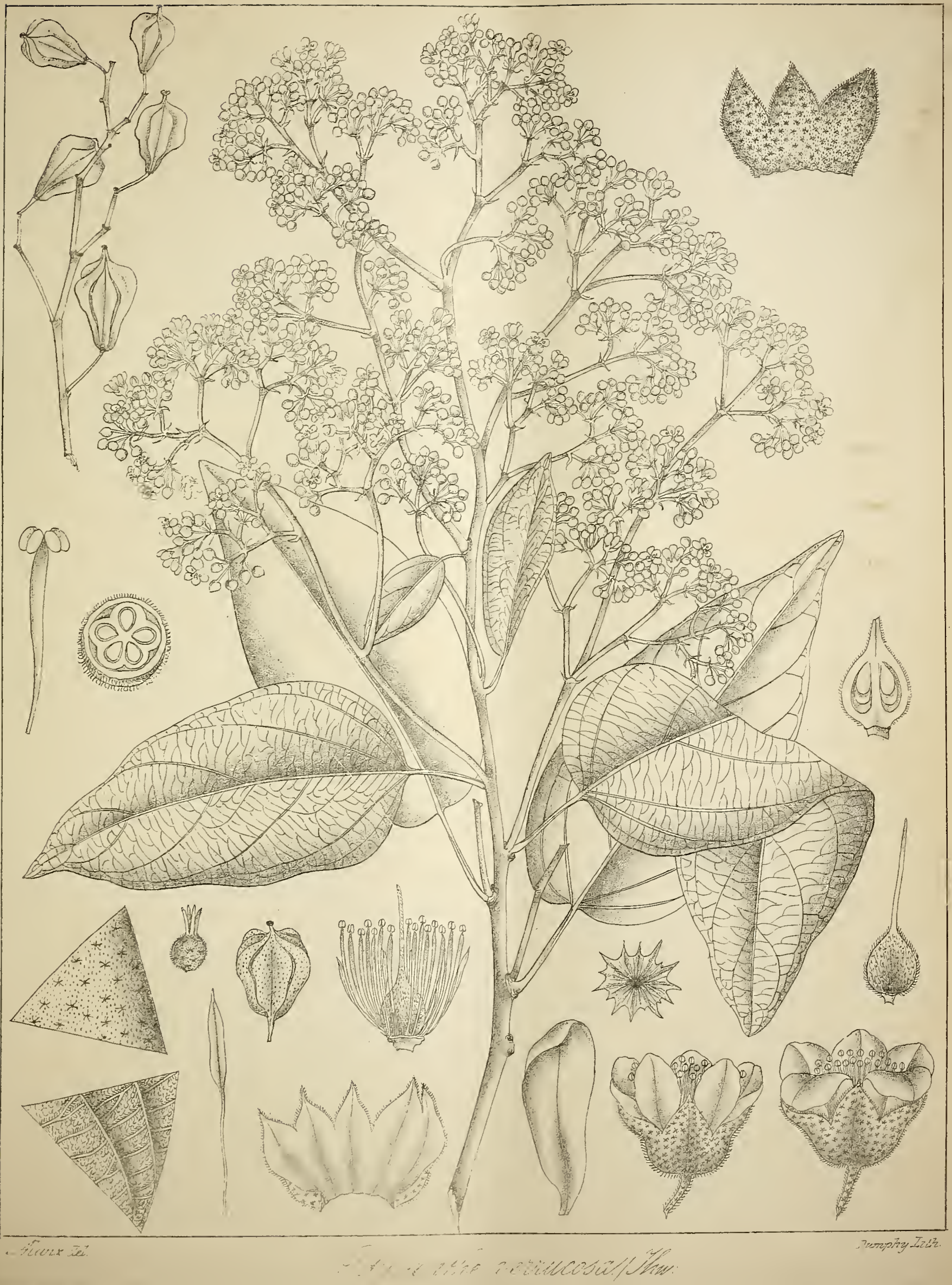
Dumphy Lith.

PITYRANTHE VERRUCOSA. (Nat. order Tiliaceæ.)

PITYRANTHE. *Thw.*—GEN. CHAR. Calyx urceolate campanulate, 3-4 lobed, petals 5 rather broad naked inserted round the base of the torus, fertile stamens about 15 inserted on to the torus free or obscurely 5 adelphous, staminodia 5 shorter than the stamens and inserted with them spathulate upwards, anthers adnate, cells divaricate, ovary 5 celled, cells 2 ovuled, styles 5 in the young bud afterwards closely united into one and filiform, capsule inflato-turbinate 5 angled loculicidally 5 valved, 1 seeded by abortion. A tree, leaves ovate or obovate crenate, flowers small in terminal panicles. *Thw. En. Pl. Zeyl. p.* 29.

PITYRANTHE VERRUCOSA. (Thw.) A tree, leaves ovate to obovate, inconspicuously crenate penninerved or sub 3 nerved, above sparingly furnished with tufts of stellate hairs at length glabrous, beneath whitish with dense close pressed tomentum, 2-6 inches long by 1-3 broad, petiole $\frac{1}{2}$-$\frac{3}{4}$ inch long, panicles terminal lepidote, flowers numerous $1\frac{1}{2}$ line long, capsule furfuraceous verrucose, seed black oblong 2 lines long very minutely reticulated covered with pale deciduous stellate pubescence. *Thw. En. Pl. Zey. p.* 29. Kleinhovia verrucosa, *Gardn. MS.*

A tree found only in Ceylon, abundant in the Batcaloa district, and at Jaffna and Trincomalee.



Fluvix del. Dumphy Lith.

verrucosa (Thw.

ERINOCARPUS NIMMONII. (Nat. order Tiliaceæ.)

ERINOCARPUS. *Nimmo.*—GEN. CHAR. Sepals 5 distinct, petals 5 with pit like glands at the base on the inside, inserted round the base of the torus, stamens numerous inserted on the elevated torus free or the exterior very shortly connate in a ring, ovary 3 celled, cells 2 ovuled, style filiform, fruit large rather woody indehiscent triquetrous, and slightly winged, echinate, seed pendulous oblong, testa coriaceous, albumen fleshy, cotyledons ovate plane. A tree, leaves broad palminerved lobate and toothed, flowers yellow large laxly arranged on large panicles, bractes cordate. *Nimmo in Hort. Bombay*;—*Benth. and Hook. Gen. Pl.* I. 234.

ERINOCARPUS NIMMONII. (Grah.) A small tree, leaves roundish cordate, irregularly serrate 5-7 lobed, lobes acute, prominently palmately 9 nerved, glabrous above pubescent beneath or in age subglabrous except the veins, about 8 inches each way, petioles 3-5 inches long, flowers nearly 2 inches across, yellow in terminal panicles, calyx stellately pubescent on the outside, ovary pubescent, fruit pubescent and echinate, about 2 inches long. *Grah. in Cat. Bombay Pl. p.* 21.

This tree is common on the Concan ghats, and probably occurs in Canara; it flowers in September and October, and is called Chowra or Jungli Bendi. The bark is used for making ropes.

Govindoo; del.

Dumphy. Lith:

Erinocarpus Nimmonii, (Grah.)

ELÆOCARPUS AMÆNUS. (Nat. order Tiliaceæ.)

ELÆOCARPUS. *Linn.*—GEN. CHAR. Sepals 4 or 5, usually valvate. Petals as many, fringed, lobed or rarely entire, inserted round the base of the torus, induplicate-valvate, and embracing some of the outer stamens in the bud. Stamens indefinite, inserted on the torus within a glandular ring; anthers oblong or linear, opening at the top in 2 valves (that is, the cells placed back to back and opening in short, terminal, confluent slits.) Ovary 2 to 5 celled, with 2 or more ovules in each cell; style subulate. Fruit a drupe, with a hard often bony putamen, 2 to 5 celled or 1 celled by abortion. Seeds solitary in each cell, pendulous (or rarely erect ?), testa hard, albumen fleshy, cotyledone broad, flat or undulate. Trees, leaves alternate or rarely opposite, entire or serrate. Flowers in axillary racemes, sometimes polygamous. (Monocera, *Jack.*)

ELÆOCARPUS AMÆNUS. (Thw.) A middling sized tree, glabrous except the young leaf buds, leaves ovate or ovato-lanceolate with a short blunt or retuse point, crenate-serrate, furnished with glands in the axils of the leaves beneath, 2-4½ inches long by ¾-2 broad, petioles 4 lines to 1 inch long, racemes puberulous very numerous towards the end of the branches, axillary and from the axils of fallen leaves, anthers quite naked, deeply cleft at the apex, each petal cut down at the apex about ⅕ of its length into about 8 segments each with 2-4 fringed points, ovary 3 celled, ovules 2 in each cell attached about the centre of the axis, drupe spherical. *Thw. En. Pl. Zey. p.* 32.

This very beautiful tree is common in the central provinces of Ceylon up to 4000 *feet, and is also cultivated in gardens.*

Govindoo del.

Dumphy, Lith.

Elaeocarpus amoenus, (Thw.)

ELÆOCARPUS FERRUGINEUS. (Nat. order Tiliaceæ.)

For Gen. Char. see letter press to Pl. cxi.

ELÆOCARPUS FERRUGINEUS. (Wight.) A good sized tree, young shoots densely villous, leaves cucullate very coriaceous ovate to elliptic serrulate, with a bluntish rather sudden point at the apex, at first villous above with fugacious tomentum, at length glabrous, densely and closely tomentose beneath, stipules linear acute glabrous viscid and shining above, downy at the base on the back, early caducous, racemes axillary or from the old axils just below the leaves, a little shorter than the leaves, tomentose as are the calyx, petals and ovary, flowers less than ½ an inch long, pedicels about the same length drooping slightly elongating in fruit, petals involute at the margins furnished with a prominent ridge up the inner face about 9 fringed but not otherwise, divided, anthers puberulous along the cells furnished with a long awn from the exterior valve, ovary 3 celled, ovaries 6-8 in 2 rows in each cell, drupe oval smooth a little more than ½ an inch long. Monocera ferruginea, *Wight Icones tab.* 225.

A very common tree on the Nilgiris, Anamallays and Pulneys, at the higher elevations. The margins of the leaves are always connivent, rendering the leaves quite boat-shaped. The timber is used for building purposes. Wight figures the ovary as 4 *celled, but in several flowers that I have dissected it is* 3 *celled.*

Govindoo, del. Dunphy, Lith:

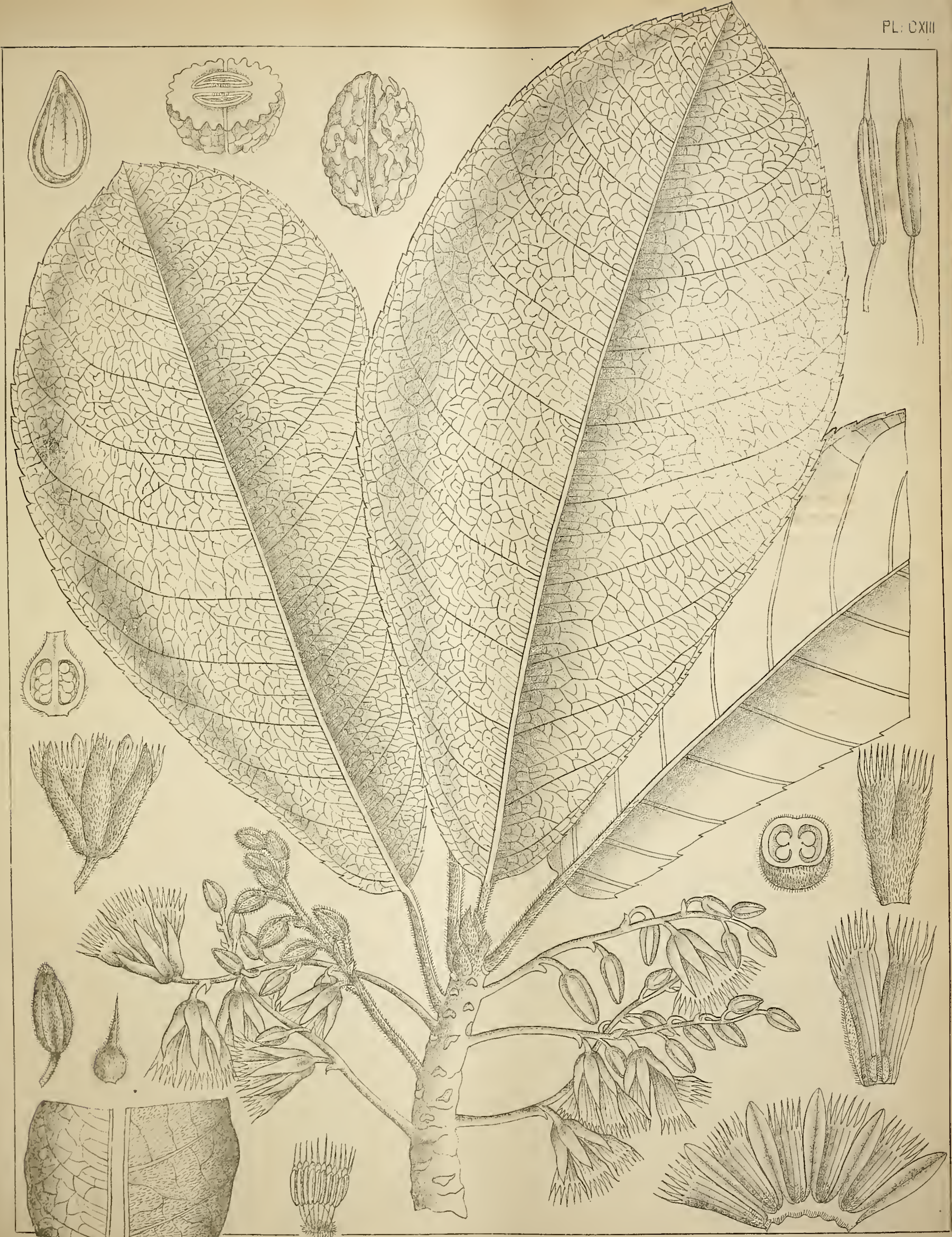
Elæocarpus ferrugineus, (Wight)

ELÆOCARPUS TUBERCULATUS. (Nat. ord. Tiliaceæ.)

For Gen. Char. see under "Elæocarpus amænus," Pl. cxi.

ELÆOCARPUS TUBERCULATUS. (Roxb.) A gigantic tree, leaves crowded about the apex of the branchlets, obovato-oblong remotely and inconspicuously serrulate, gradually narrowed into a retuse base very broad towards the apex and obtusely pointed, glabrous above villous beneath particularly along the veins, 8-12 inches long by 4-5 broad, petioles 1-2 inches long round and villous, stipules conical villous deciduous, racemes numerous just below the leaves (from the axils of fallen leaves) 3-4 inches long villous as are the bractes, pedicels and calyx, pedicels short drooping 1 flowered, bractes lanceolate caducous 1 to each flower, flowers pure white 1 inch long, petals villous on the back glabrous inside except at the 2 oblong glands at the base, each one bifid for nearly half its length the divisions overlapping, many fringed, anthers very numerous 70-80, each with a long terminal beak from the exterior valve, ovary 2 celled, ovaries numerous in 2 rows, drupe size of a small apple, nut woody oval slightly compressed much tubercled on its flat sides with a thickened margin, 1-2 celled. *Roxb. Fl. Ind.* iii. *p.* 594. Monocera tuberculata, *Wight. Ic. tab.* 62. E. serrulatus, *Roxb Hort. Bengh. p.* 42. E. bilocularis, *Roxb. in E. I. C. Mus. tab.* 1. 985.

This truly magnificent tree is very common in Coorg, the Annamallays, Malabar and Travancore, up to an elevation of about 4.000 *feet, and probably throughout our western forests. Very large trees of it may be seen in the dense forests about the foot of the Nilgiris below Makurty Peak and Banghy tappal; it is called Roodrack, and the beads are worn as ornaments, and by fakeers. I am not acquainted with the timber, but it is worth attention.*



Alwis, del

Dumphy. Lith.

Elæocarpus tuberculatus (Wight)

LEPTONYCHIA MOACURROIDES. (Nat. order Tiliaceæ.)

LEPTONYCHIA. *Turcz.*—GEN. CHAR. Sepals 5 distinct valvate in bud, petals 5 glandular at the base very small inserted round the base of the torus alternate with the sepals, imbricate in bud, staminal tube short embracing the base of the ovary, fertile stamens 10 in pairs in the sinuses of 5 small tooth like staminodia, each fertile filament being also furnished with a long sterile filament attached at its back about ⅓rd from the base, anther cells parallel at length divaricate, ovary 4 celled, ovules numerous in 2 rows attached to the axis, style simple, stigma obscurely 2 fid, fruit verrucose and densely downy dehiscent, by abortion 3 celled, cells 1 seeded, seed covered with a red spongy aril, albumen horny, embryo straight, radicle pointing to the hilum. Trees or shrubs, leaves entire glabrous, flowers small in short axillary cymes.

LEPTONYCHIA MOACURROIDES. (Bedd.) A small tree with much the appearance of a Grewia, leaves glabrous on both sides penninerved or sub 3 nerved at the base, oblong with a long gradually fine acumination, about 4 inches long by 1¾ broad, petioles 3-4 lines long, stipules small lanceolate early caducous, flowers in axillary cymes about the length of the petioles, calycine segments linear lanceolate pubescent, petals nearly orbicular not more than ¼th the length of the sepals densely villous except at the base inside, ovary and style pubescent, fruit about ¾ of an inch each way slightly 2 lobed verrucose and covered with down (and much like that of Moacurra gelonioides).

An elegant small tree inhabiting the western coast forests of the Madras Presidency, 1,000 *to* 3,000 *feet elevation. I have met with it on the Carcoor ghat in the Wynad, on the Coimbatore hills, and on the Tinnevelly ghats.*

Gouindoo, del. Dunphy, Lith.

Leptonychia moacurroides, (Bedd.)

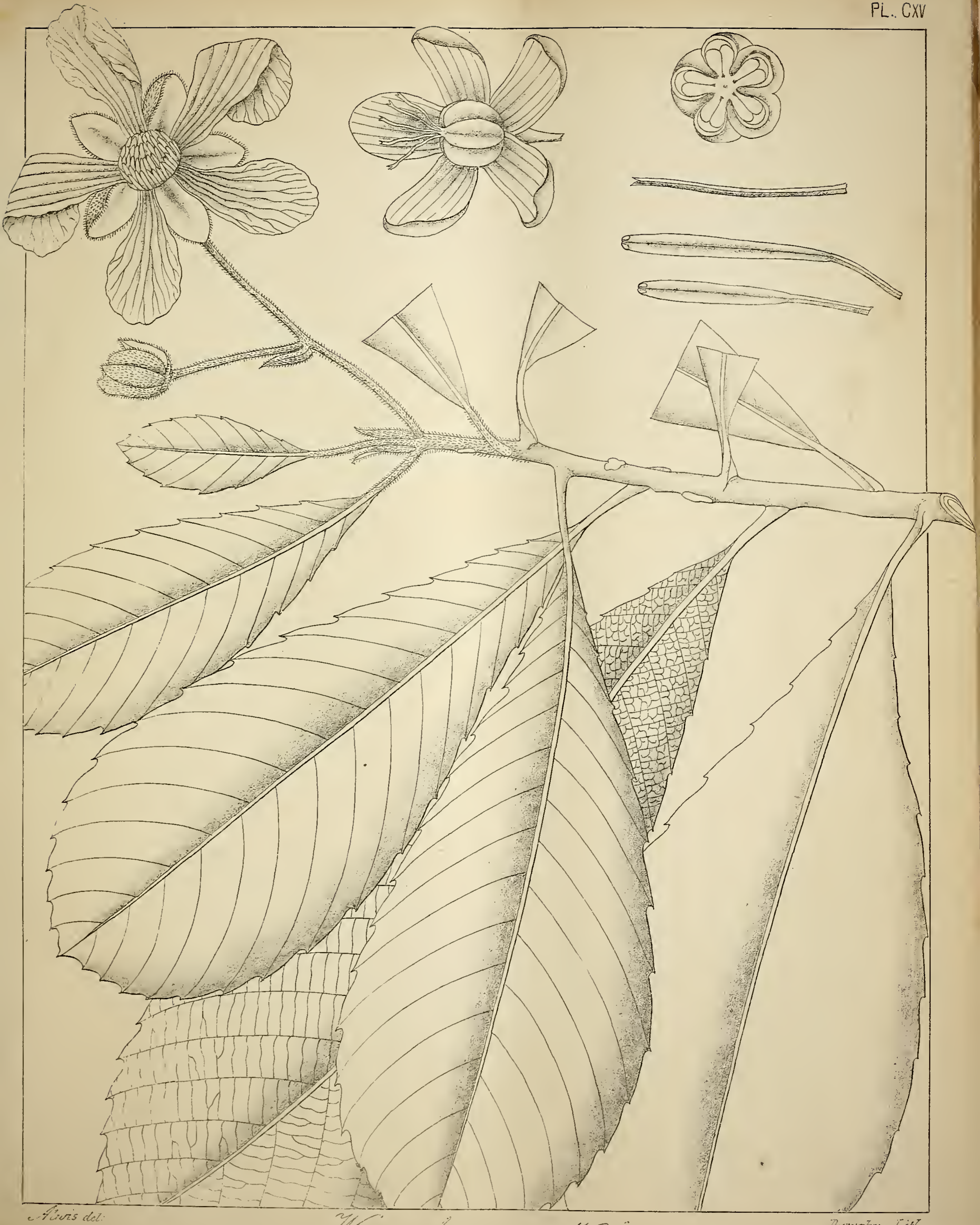
WORMIA BRACTEATA. (Nat. ord. Dilleniaceæ.)

WORMIA. *Rottl.*—GEN. CHAR. Sepals 5 spreading. Petals 5. Stamens numerous, with erect linear anthers opening at the summit in two pores, the inner ones often longer and recurved. Carpels 5 to 10, scarcely cohering, with several ovules in each, dehiscent when ripe. Seeds with an arillus. Trees, often very lofty, leaves large, with raised parallel veins diverging from the midrib, the petioles often bordered with narrow deciduous wings, flowers large, in loose terminal panicles.

WORMIA BRACTEATA. (Wight.) A large tree, young parts sericeous, leaves obovate gradually attenuated towards the base, rounded at the apex crenate or serrate, glabrous on both sides in age, 3-8 inches long by 3-3½ broad, petioles 1-1¼ inches long, racemes few flowered, leaf opposed, pubescent, shorter than the leaves, flowers white 2½-3¼ inches in diameter, sepals sericeous on the outside, petals obovate, ovaries 5, styles minutely 2 cleft at the apex. Dillenia bracteata, *Wight Icones tab.* 358. Wormia, *H. f. et T. Flora Ind. p.* 68.

This very handsome tree I have only observed on the Coimbatore hills and the Anamallays, but it is also found in Mysore and on the North Arcot and Cuddapah hills. It is well deserving of cultivation for ornamental planting, &c. The specimen figured was collected in the Bolamputty valley on hills near Coimbatore, and I believe I am correct in referring it to Dr. Wight's species; his figure however is not as good as his description.

WORMIA TRIQUETRA. (Rottl). A Ceylon tree very like this species, differs in its much broader leaves rounded at the base, and in its more numerously flowered glabrous peduncles; the young petioles are curiously sheathed in the stipules, which latter are however soon deciduous. It is a highly ornamental tree and very common about Colombo, and might receive attention for ornamental planting.



Alwis del:

Wormia bracteata, (Wight.)

Dumphy. Lith.

CRATÆVA RELIGIOSA. (Nat. ord. Capparidaceæ.)

CRATÆVA. *Linn.*—GEN. CHAR. Calyx 4-partite; lobes distinct from the base and open in æstivation. Petals 4, elliptical or ovate, penniveined, with a long claw. Stamens usually 16-20, inserted on the more or less dilated torus; filaments free filiform. Ovary ovoid or globose on a long gynophore, 1-celled with 2 multiovulate placentas or 2-celled owing to the cohesion more or less of the placentas. Stigma sessile. Fruit globose or ovoid with a coriaceous rind. Seeds indefinite, reniform; testa coriaceous; radicle conical, incumbent. Trees or shrubs, leaves 3-foliolate, flowers corymbose, showy.

CRATÆVA RELIGIOSA. (Forst.; DC. Prod. I, 243.) A tree attaining about 30 feet. Branches glabrous, smooth or slightly verrucose. Leaves 3-foliolate. Leaflets membranous, acuminate, entire, glabrous, petiolulate, articulated to the petiole, 3-6 inches long; central leaflet elliptical elliptic-lanceolate or oblanceolate, narrowed into the petiolule; lateral leaflets usually obliquely ovate-elliptical or rhomboidal. Flowers polygamous, $\frac{3}{4}$-$1\frac{1}{2}$ inches across, in terminal and lateral many-flowered corymbs. Pedicels $\frac{1}{2}$-2 inches; upper bracts linear or subulate, caducous. Calyx-lobes oblong or ovate-oblong, distinct, rather acute. Petals enlarging after expansion; lamina elliptical or ovate, obtuse, claw equalling the sepals. Ovary ellipsoidal to globose, on a gynophore of 1-2 inches, 1-celled or 2-locular at least partially, owing to the cohesion of the placentas. Fruit about the size of an apple, with a coriaceous pericarp on a strong stipes. *Oliver Fl. Afr. p.* 99. C. Roxburghii, *B. Br.* C. Adansonii, et læta, *Dc. Prod. I.* 243.

A small tree very handsome when in flower, common throughout the Madras Presidency, Bombay, Bengal, and in Ceylon, and also found in Africa; it occasionally flowers before the leaves are developed, but not generally; it is very common on the banks of rivers, and is much planted by natives. The wood is soft but tolerably serviceable and is used for various purposes. The tree is called Uskia man (Teligu) in the Northern Division and in the Godavery forests, and Lunuwarana in Ceylon; the fruit is hard, globose and woody, and something like that of the Wood-apple (Feronia.)

Govindoo, del. Dunphy, Lith.

Crataeva religiosa (Forst)

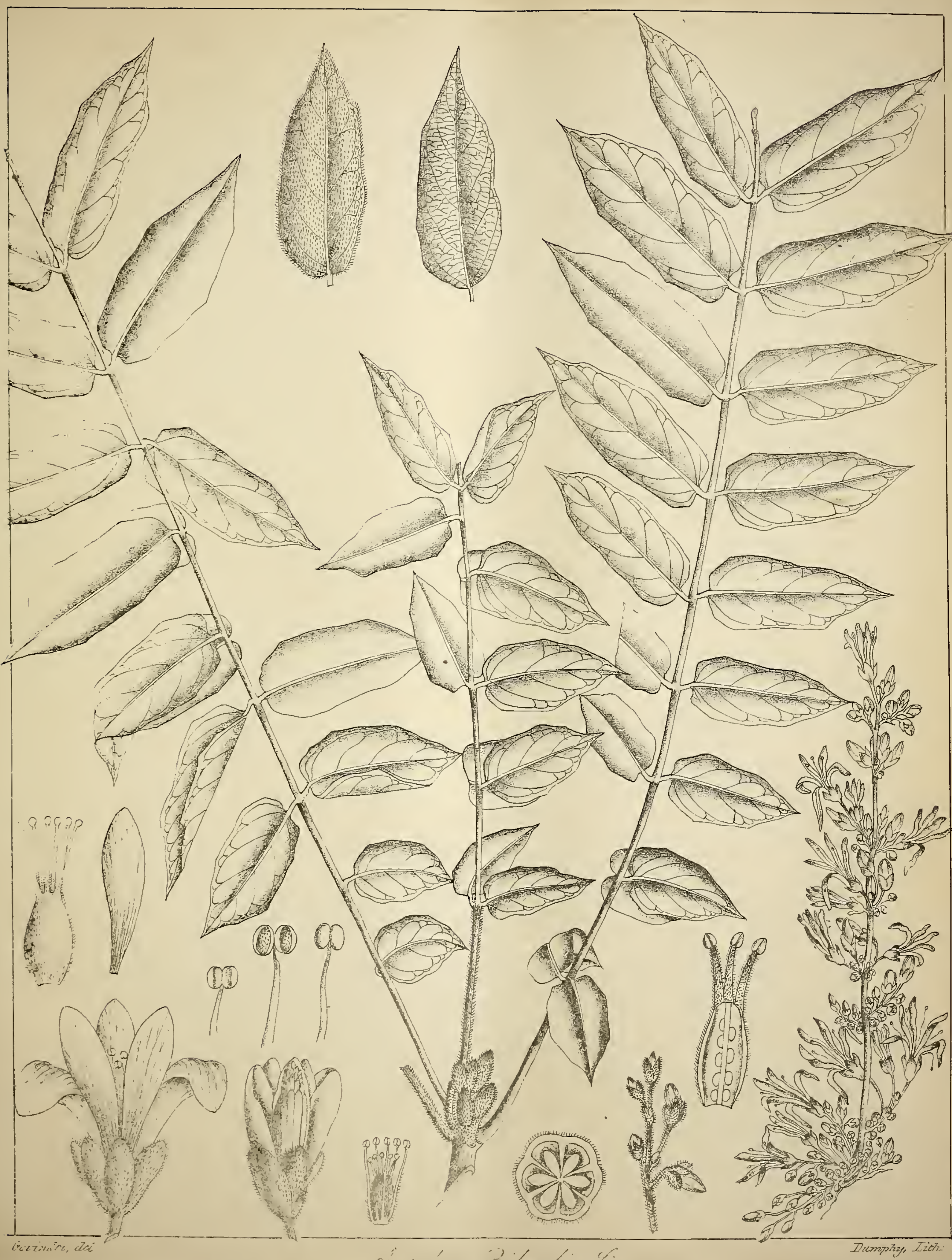
AVERRHOA BILIMBI. (Nat. ord. Geraniaceæ.)

AVERRHOA. *Linn.*—GEN. CHAR. Flowers regular, sepals 5 imbricate, petals 5 hypogynous contorted, glands of the disk none, stamens 10 very shortly connate at the base all bearing anthers or 5 sterile, ovary slightly 5-6 lobed, 5-6 celled, styles distinct, stigmas capitate; ovules numerous in the cells, berry oblong indehiscent, seed naked or arillate, albumen fleshy sparse, embryo straight. Trees, leaves alternate unequally pinnate exstipulate, flowers racemosely panicled.

AVERRHOA BILIMBI. (Linn.) A small tree, 15-20 feet, leaflets sub-opposite 5-10 pairs (rachis very villous) softly villous on both sides especially underneath, entire ovate to oblong-lanceolate acuminate, $1\frac{1}{2}$-2 inches long by $\frac{3}{4}$ inch broad, petioles 1-2 lines long, panicles villous, flowers reddish, calyx villous or pubescent, limb of the petals ovate-oblong, anthers 10 alternately long and short, ovary 5-6 celled, style 5-6, fruit oblong obtusely angled, seed exarillate. *DC. Prod. I, p.* 689. Bilimbi, *Rheede Mal.* 3. *t.* 45, 46.

This pretty little tree is common in a cultivated and semi-wild state, and easily establishes itself; it is supposed to be a native of India, but I have never seen it in any of our jungles; the fruit is a pleasant acid, and syrup is made of it, and it is preserved and pickled. Its native name is bilimbi.

Leaves shown very badly indeed!



Gerimâni, del. Dumphy, Lith.

Averrhoa Bilimbi, Linn.

GARUGA PINNATA. (Nat. ord. Burseraceæ.)

GARUGA. *Roxb.*—GEN. CHAR. Flowers polygamous. Calyx campanulate, 5-lobed, valvate. Petals 5, inserted above the middle of the calyx-tube, induplicate-valvate. Disk thin, lining the calyx-tube. Stamens 10, inserted with the petals. Ovary 4 or 5-celled; styles elongated; ovules 2 in each cell. Drupe indehiscent, with 5 or fewer bony nuts, rugose outside. Seeds solitary in each nut; cotyledons folded. Trees, leaves pinnate. Flowers rather large for the order, in terminal panicles.

GARUGA PINNATA. (Roxb.) A large tree, leaves unequally pinnate, 8 inches to 3 feet long, leaflets very shortly petioled, generally about 7-9 pairs with an odd one, elliptic-oblong very unequal at the base with an acumination at the apex, crenate-serrate, 2-4 inches long by 1-1¼ broad, more or less villous on both sides or nearly glabrous, panicles terminal many flowered puberulous or mealy, flowers 2-3 lines in diameter yellowish white, disk lining the calyx tube for more than half its length and closely adhering to it, crowned with 10 gland-like rounded teeth at its apex each alternate with one of the stamens, filaments hairy, anthers versatile, ovary sessile hairy, styles hairy combined into one elongate about as long as the petals, stigmas 5, drupe globose fleshy about the size of a gooseberry with 1-5 bony nuts. *Roxb. Fl. Ind.* ii. 400.

A very common tree in almost every dry jungle and forest in the Madras Presidency, also in Bombay and Bengal, but absent from Ceylon; the leaves are deciduous in the cold weather and appear with the flowers early in the hot season; the fruit is eaten by the natives both raw and pickled. The tree is called Koorak in the Bombay Presidency, and Khar-pat in Bengal; the timber is I believe, inferior, but is in use with the natives, and rather prized in some parts. The bark is collected by tanners, and the leaves are used as fodder. The Teligu name is Garugu, and the Tamil Karre Vembu.

PL. CXVIII.

Gosindoo del. Dunphy. Lith.

Garuga pinnata (Roxb.)

SCHLEICHERA TRIJUGA. (Nat. order Sapindaceæ.)

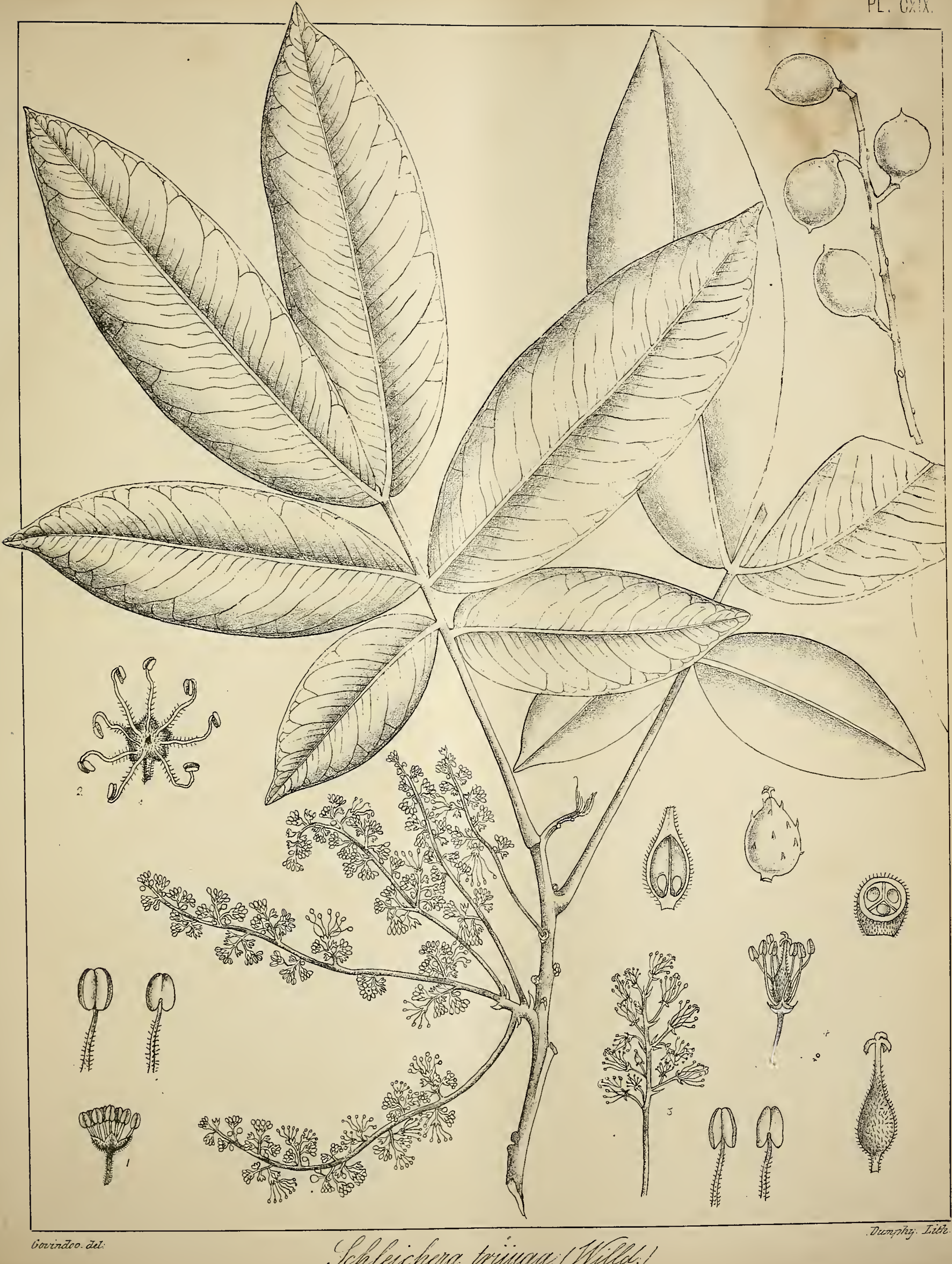
SCHLEICHERA. *Willd.*—GEN. CHAR. Flowers polygamo-diœcious, calyx small 4-6 cleft valvate or obscurely imbricate, petals 0, disk repand or lobed, stamens 8-10 (rarely 4-5) inserted on to the disk, filaments elongate puberulous, anthers basifixed, ovary 3-4 celled, attenuated into a rigid style, stigma capitate 3-4 lobed, revolute, ovules solitary in the cells erect, fruit dry subcrustaceous ovoid apiculated with the base of the style unarmed or armed with a few prickles, 1-3 celled, seed erect included in a pulpy aril compressed, testa black, embryo conduplicate, cotyledons unequal connate. Trees, leaves alternate exstipulate abruptly or unequally pinnate, leaflets subopposite few paired entire or undulately repand, racemes simple or paniculate, flowers small fasciculate.—Cassumbium, *Rumph.* Koon, *Gœrt.* Melicocca, *Juss.*

SCHLEICHERA TRIJUGA. (Willd.) A large tree, young parts sericeous, leaves about the extremities of the branches abruptly pinnate, 8-16 inches long, leaflets 2-4 pairs, subopposite sessile lanceolate to oblong, entire very unequal at the base, pretty smooth on both sides, the lowest pair the smallest, 3 to 8 inches long by 1-1½ broad, panicles axillary or from the old axils, slightly puberulous; male flowers and hermathrodite generally on different trees, male flowers much crowded, stamens 6-10, generally 8, a small rudiment of an ovary in the middle of the disk. Hermathrodite, flowers more laxly arranged, ovary ovoid gradually attenuated into a short style 3 celled, cells 1 ovuled, ovules erect, stigma 3 lobed, fruit dry size of a small nut smooth and unarmed, or furnished with a few prickles, aril succulent and edible. *Roxb. Fl. Ind.* ii. 277. [illegible]

This handsome tree is very abundant throughout the Madras Presidency, Bombay, Bengal and Ceylon, ascending the mountains up to about 3,000 *feet, but always confined to the dry forests. It flowers early in the hot season, it is one of our most valuable unreserved timbers, and the wood is much prized in some districts; it is reddish in color, very hard and heavy, and makes excellent crushers for sugar and oil mills, and is in use for building and a variety of purposes. The common Tamil name is Puva, and the Teligu Puska, on the Anamallays it is called Puvatti by the Kaders, and in Canarese it is called Chakota and Akotà, in Ceylon Cong, and in Bengal Gosam. The fruit ripens in May, and the pulpy aril is a very agreeable acid; an oil is expressed from the seed and used for burning, and a quantity of lac is produced on the young branches. The fruit is sometimes quite smooth though often armed with prickles, which is evidently caused by some insect.*

The figure represents a flowering branch of a male tree:—1 *is a young male flower, stamens not fully developed*; 2, *the disk and stamens of male flower, calyx removed*; 3, *a branch of hermathrodite flowers*; 4, *an hermathrodite flower.*

Very bad for Ceylon oak. [illegible] crisp & [illegible] & very like [illegible] English oak.



Govindoo. del. Dunphy. Lith.

Schleichera trijuga; (Willd.)

TROCHISANDRA INDICA. (Nat. order Celastrineæ.)

TROCHISANDRA. *Bedd.*—GEN. CHAR. Calyx 5 cleft, petals 5 patent, stamens 5 alternating with the petals and monadelphous in a complete ring round the base of the ovary, filaments subulate, anthers didymous, ovary globose free 2 celled, cells 2 ovuled, ovules erect, raphe ventral, micropyle inferior, styles 2 filiform, capsule coriaceous deeply 2 lobed 2 celled dehiscent, seed generally solitary by abortion erect furnished with a very large thick fleshy aril, albumen sparse fleshy, embryo erect, cotyledons small ovate unequal, radicle elongate. A lofty tree, stipules very large at the apex of the branches including the leaf bud, early deciduous and leaving a large scar, leaves alternate entire very coriaceous and shining penniveined, panicles axillary, flowers small on short pedicels.

My only flowering specimen of this new genus has been forwarded to Kew, and the generic character is taken from a drawing of the flower made some three years ago, and a specimen in fruit.

TROCHISANDRA INDICA. (Bedd.) A lofty tree, everywhere glabrous, leaves oblong to oblongo ovate very coriaceous and shining, veins very prominent on the underside scarcely acute or rounded at the apex 6-8 inches long by 2-3 broad, petioles 1-1¼ inches long, panicles axillary towards the apex of the branches about the length of the leaves many flowered, flowers small 2-3 lines in diameter, capsule deeply 2 lobed, lobes oblong 1-1½ inches long, one generally abortive and smaller than the fertile one, dehiscing at maturity.

A very handsome tree with a beautiful foliage, much resembling the Indian rubber tree (Ficus elastica) when only in foliage; it is very abundant in the dense moist forests of the Anamallays at an elevation of 3,000-4,500 feet, in which localities it is a very large tree, and I have also observed it on the banks of the Toracadu (on the same mountains) at an elevation of nearly 6,000 feet, but it is of smaller growth at this elevation; it is said by the natives to yield a valuable timber; it flowers in December and January, and ripens its fruit in April and May. The genus is nearly allied to Kurrimia (Wall).

Govindoo, del: Dumphy, Lith:

Trochisandra Indica, (Bedd:)

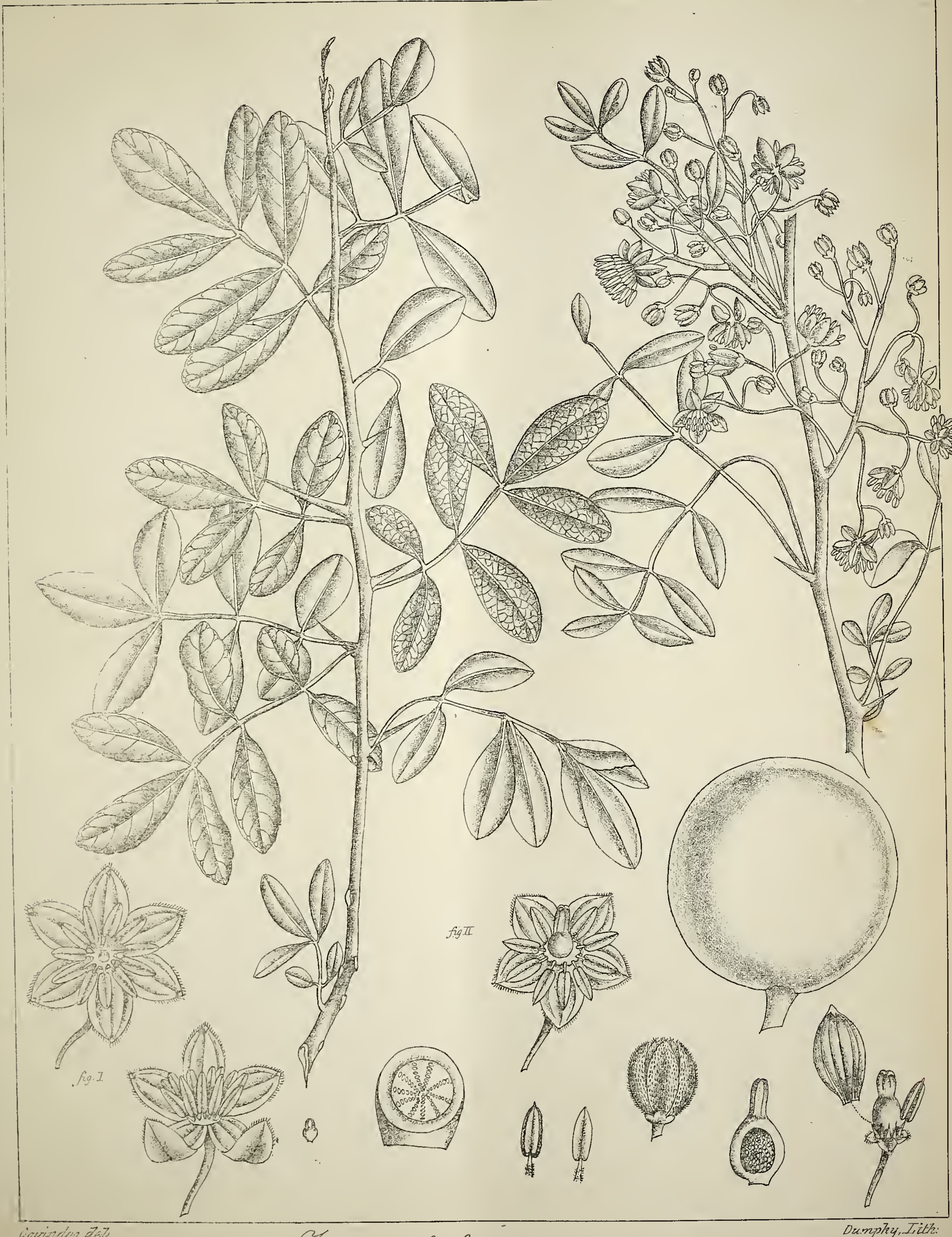
FERONIA ELEPHANTUM. (Nat. order Rutaceæ.)

FERONIA. *Correa.*—GEN. CHAR. Flowers polygamous by abortion, calyx small 5 toothed, teeth deciduous, petals 5 rarely 4-6 patent oblongo-lanceolate imbricate with incurved tips, stamens 10-12 (sometimes a few imperfect ?) filaments dilated at the base, apiculate at the apex, inserted below the torus, anthers linear-oblong, torus a short soft woolly bed, style none, stigma large oblong 5 lobed, ovary oblong 1 celled, placentas 5-6 parietal, ovules numerous crowded in many series, berry globose woody 1 celled, many seeded, filled with pulp, seed oblong compressed, cotyledons thick fleshy. A thorny tree, leaves unequally pinnate, flowers racemose or panicled ; fruit large woody, pulp edible.

FERONIA ELEPHANTUM. (Corr.) A large tree, leaves unequally pinnate 2-4 inches long quite glabrous, leaflets 5-7 almost sessile lanceolate to obovate quite entire or slightly crenulate towards the apex, furnished with glandular dots, petioles slightly winged, panicles short axillary or terminal or from nodes in the old axils, puberulous, flowers small dull reddish colored, petals ciliate at the apex, in the male flower there is a small abortive ovary and 5 lobed stigma and generally 11-12 fertile stamens, in the hermathrodite the stamens are fertile generally 10, the filaments in the male are rather shorter and less apiculate than in the hermathrodite, (I have never observed imperfect stamens in either sex.) Fruit as large as a billiard ball, hard and woody with a greyish rind, seeds immersed in fleshy edible pulp. *DC. Prod. Vol.* i. 538.

This tree is common throughout India and in Ceylon, it is universally known as the Wood-apple, in Teligu it is called Velagà and Elakà ; Kaweet in Hindustanee ; Velà in Tamil ; Bilwàr in Canarese ; and Diwool in Ceylon : the wood is hard, strong, heavy and durable, and is used for various purposes. A gum exudes from the trunk, which is much like the gum Arabic, the pulp of the fruit makes a pleasant jelly, and the leaves are used medicinally by the natives. The tree flowers in February and March, it is much cultivated throughout India, it is the only species of this genus.

Fig. i. fertile flowers.
Fig. ii. male flowers.



Govindoo. del.

Dumphy, Lith:

Feronia elephantum, (Corr:)

AILANTHUS MALABARICA. (Nat. order Simarubeæ.)

AILANTHUS. *Desf.*—GEN. CHAR. Flowers polygamous, calyx small 5 lobed, lobes equal imbricate, petals 5 patent valvate or slightly imbricate at the sides with the tips incurved, disk 10 lobed, stamens 10 in the male flowers, (10 or fewer or none in the female or hermathrodite) inserted at the base of the disk, filaments very short or filiform without scales, ovary of 2-5 carpels more or less connate (rudimentary in the male flowers) carpels compressed 1 celled, styles as many as the carpels consolidated into 1 with plumose stigmas, often more or less distinct towards the base, ovules solitary in each cell attached to the ventral suture below the apex, fruit of 1 to 5 oblong membranous samaræ thickened in the centre round the single seed, seed flattened, suspended, testa membranaceous, albumen scanty, cotyledons leafy nearly orbicular, radicle short superior. Large trees, leaves alternate pinnate, leaflets many pair, flowers small in terminal panicles.

AILANTHUS MALABARICA. (DC.) A lofty tree, bark rough and often studded with bright reddish grains of resin, leaves equally pinnate, quite glabrous 15-20 inches long, leaflets 6-10 subopposite or opposite pair commencing a little above the base of the petiole, semiovate from a very unequal base gradually attenuated into a long acumination, glabrous on both sides, shining above, very pale beneath, (veins pinnate forked and looped near the margin) 3-7 inches long by 1-1½ broad, petiolules 2-4 lines long; panicles axillary much branched nearly as long as the leaves and occasionally leafy at the base of the lowest ramification, slightly puberulous or glabrous, calyx slightly puberulous and ciliate, petals slightly imbricate at the edges and with incurved tips, male flowers smaller than the female, disk 10 lobed with a minute 3 lobed rudiment of an ovary in its centre, stamens much exserted, much longer than the corol, anthers oblong attached by the centre of the back; female flowers with 10 sterile stamens alternately shorter, all much shorter than the corol, anthers sterile saggitate basifixed, disk large irregularly lobed or warted. Samara 3-3¾ inches long by 10-13 lines broad. *DC. Prod.* ii. *p.* 89. Pongelion, *Rheed. Mal.* 6. *t.* 25.

A very lofty tree, common in the dense moist forests of the Western ghats of the Madras Presidency (up to 3,000 *feet) from S. Canara down to Cape Comorin, also in Ceylon*; *in S. Canara it is called Doop or Baga Doop, matti pâl on the Annamallays, and Kumbalu or Wal biling in Ceylon, in Travancore the tree is commonly planted, and is very ornamental, a fragrant resinous balsam (known as mutti pâl) exudes from the trunk, reduced to powder mixed with milk and strained it is given by native doctors in dysentery and said to be a first rate remedy, the bark has a pleasant slightly bitter taste and is used medicinally by the natives as a febrifuge and tonic. Mr. Broughton has favored me with the following report on some of the resin submitted to him for analysis.*

" *This resin as commonly met with is dark brown or grey in color, is plastic, opaque and has an agreeable smell. It contains much impurity. The pure resin is very soft, having the consistence of thick treacle, and this is doubtless the reason why it is always mixed with fragments of earth which makes it more easy to handle. The sample which I examined contained but* 77 *per cent. of resin, the remainder being adulterations. Alcohol readily dissolves the resin, and on evaporation leaves it as a very viscous, transparent light brown semi-liquid which does not solidify by many days exposure to a steam heat. When burnt it gives out a fragrance, and hence it is sometimes used for incense. Its perfume is however inferior to that produced by many other resins employed in the concoction of the incense employed in Christian and Heathen worship. The peculiar consistency of the resin would enable it to substitute Venice turpentine for many purposes. A substitute for Venice turpentine in India is mentioned as a desideratum in the reports of the Juries of the Madras Exhibition of* 1855, *class IV.*"

Govindoo, del. Dumphy, Lith.

Ailanthus Malabarica (DC.)

ODINA WODIER. (Nat. ord. Anacardiaceæ.)

ODINA. *Roxb.*—GEN. CHAR. Flowers polygamous. Calyx 4-5 fid or partite; segments ovate or roundish. Petals as many, imbricate. Disk small, annular or saucer-shaped. Male flowers, stamens 8 or 10, inserted under the margin of the disk; anthers versatile or subversatile. Rudiment of ovary usually 4 fid. Fertile flowers, anthers smaller often effete. Ovary sessile, free, glabrous or hairy, 1 celled. Styles 4 or 3, short, distinct, rather stout; stigmas terminal. Ovule solitary, pendulous. Drupe oblong or ellipsoidal, compressed. Embryo with flat fleshy cotyledons. Trees or shrubs. Leaves alternate, deciduous, unequally pinnate, usually collected at the extremities or in lateral tufts from nodes of a previous year; leaflets opposite, entire. Flowers racemose, often fasciculate, shortly pedicellate or subsessile. *Roxb. Fl. Ind.* ii. 293. Lannea, *Guill. and Perr. Fl. Seneg.* 1. 153.

ODINA WODIER. (Roxb.) A large tree, trunk of no great height to the branches, but thick and tolerably straight, bark pretty smooth ash colored, branches numerous, the lower spreading the upper ones disposed in every direction generally leafless at the time of flowering, leaves alternate about the ends of the branchlets unequally pinnate 10 to 18 inches long, leaflets about 5 opposite pair (with an odd one) on the upper half of the common petiole; sessile or subsessile ovate to oblong often oblique at the base entire with a longish blunt acumination, when young more or less covered with white stellate wool at length quite glabrous, 2-5 inches long by 1·2 inches broad; inflorescence terminal the male on long filiform panicled spikes, the fertile on short racemes both covered with stellate rather scaly pubescence, flowers tetramerous very small, male and fertile on the same tree or on different trees, calyx slightly hairy, in the male there are 8 fertile stamens on long filaments inserted under the 8-9 lobed disk, in the centre of which is the rudiment of an ovary terminating in a style with a star-like 4 cleft apex, in the female there are 8 sterile anthers on short filaments a large ovary crowned with 4 short stout distinct styles, stigmas more or less 2 cleft, drupe kidney-form smooth, red when ripe, the size of a small olive.

This tree is common in most of our jungles aad is found in Bengal, Bombay and Ceylon, and is also abundant everywhere in this Presidency in a planted state, particularly as an avenue tree, but the cultivated trees are generally grown from cuttings and are gnarled ugly specimens; it is the worst possible avenue tree as it is bare of leaves for several months in the driest and hottest time of the year; it is called Gumpini and Dumpini in Teligu, Wodier and Wude in Tamil, Shimtee and Poonil in Canarese, and Hig or Hok in Ceylon, it seldom ascends the mountains to any elevation, but is found all over the Mysore plateau at 3,000 *feet; the outer wood is white and worthless, but the heart wood of good seedling trees which is of a deep reddish mahogany, is useful for many purposes and would be excellent for cabinet purposes and furniture, the tree is lopped for fodder and a gum exudes from the trunk which is used medicinally by the natives, being given in asthma and as a cordial and used as a plaster and also in cloth printing, the tree inhabits Birmah, where it is called Nabhay and the timber is in use for sheaths of swords, spear handles, oil presses and rice pounders, and a closely allied species is found in tropical Africa.*

Gourdoo del.

Dunphy lith.

Odina Wodier (Roxb.)

BOSWELLIA GLABRA. (Nat. order Burseraceæ.)

BOSWELLIA. *Roxb.*—GEN. CHAR. Flowers reuglar hermathrodite. Calyx small 5-7 toothed persistent, petals 5-7 spreading imbricate, stamens 10-13 alternately shorter inserted under the fleshy annular undulate or crenate disk, ovary sessile narrowed into a short style 3 rarely 4 celled, stigma 3-4 lobed or entire, ovules 2 in each cell collateral attached to the axis above the middle, fruit 3 rarely 4 angled coriaceous, the epicarp separating in 3-4 valves from as many bony 1 seeded pyrenes which are persistent to the central axis, seed compressed pendulous with a membranaccous margin, testa membranaceous, cotyledons multifid contortuplicate or quite flat, radicle superior. Trees abounding with resin, bark deciduous in papery or membranous laminæ, leaves deciduous crowded at the apex of the branches, alternate, unequally pinnate, exstipulate, leaflets opposite serrate, racemes or panicles axillary or collected at the ends of the branches, appearing before the leaves, flowers white. *Roxb. Pl. Corom.* iii. 4. *t.* 207. Libanus, *Coleb. in As. Res.* 9. 377 *t.* 5. *f.* 1. Plæsslia, *End. Nov. Stirp. Dec.* 39.

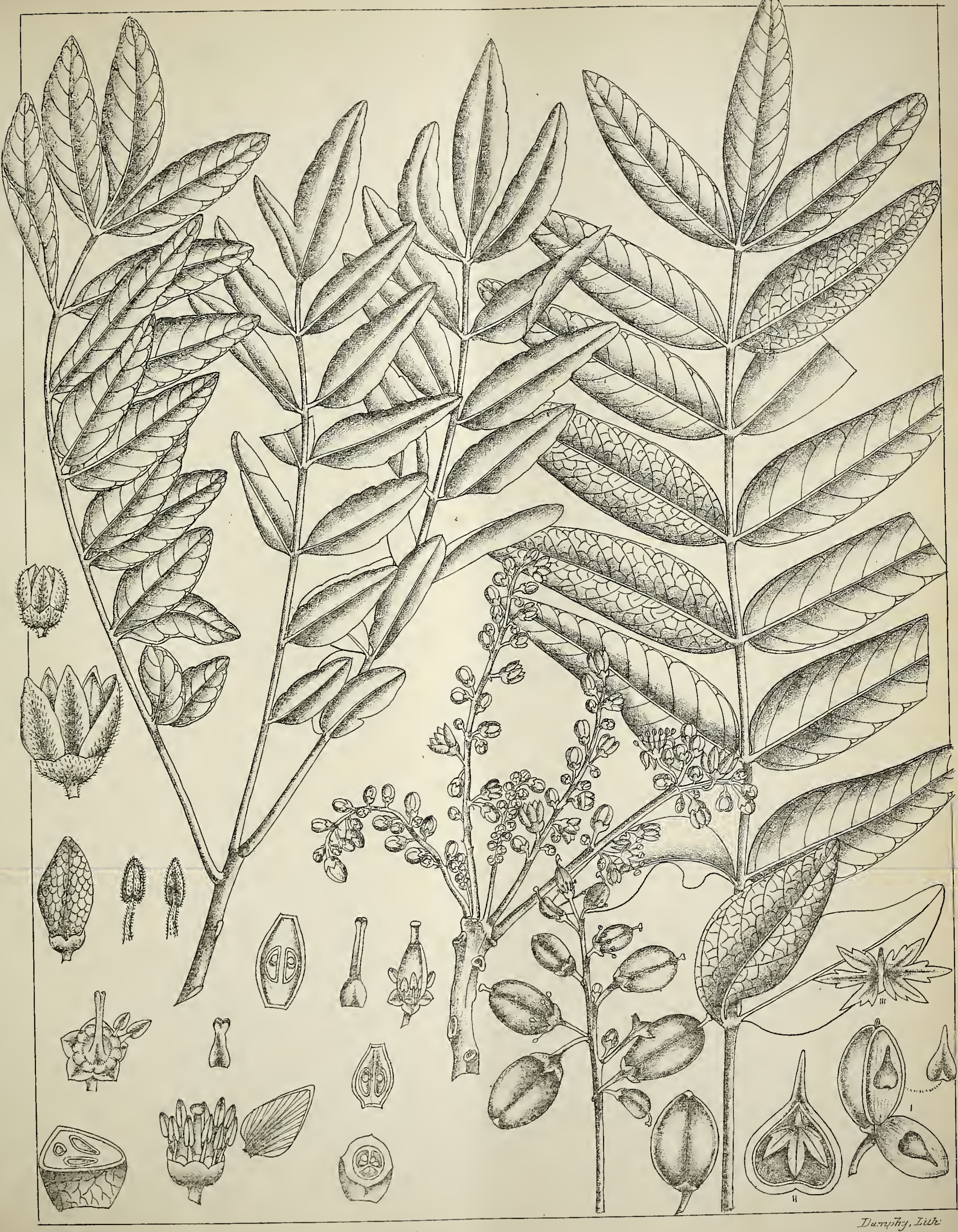
BOSWELLIA GLABRA. (Roxb.) A good sized tree with a greenish smooth bark, leaves alternate towards the apex of the branches unequally pinnate, about 1 foot long, the petiole very slightly puberulous or glabrous, leaflets 6-10 opposite or subopposite pair, with a terminal odd one, sessile or subsessile, glabrous on both sides, from quite entire to distantly serrated often only towards the apex, lanceolate obtuse about 2½ inches long, by 10-12 lines broad, racemes terminal, or from the upper axils rather crowded, slightly puberulous, calyx puberulous or subglabrous 5-6 or occasionally 7 cleft, petals 5-6 occasionally 7 slightly puberulous on the back, anthers hairy 10-12 occasionally 13, ovules 2 in each cell collateral attached to the axis above the middle, stigma 4 lobed, pyrenes (not quite mature) heart-shaped with a long beak at the apex (at length winged?), cotyledons flat or contortuplicate trifid, lobes again variously cut or entire, radicle superior long. *Roxb. Fl. Ind.* ii. *p.* 384.

This fragrant resin-bearing tree is very common in many of our dry subalpine jungles, particularly on the eastern side of the Presidency, on the Vellore, Cuddapah, North Arcot and Kurnool hills, Mysore, Guzzlehatty pass, &c. &c.; it does not occur in Ceylon, it flowers in January and February generally when quite destitute of leaves, the gum-resin is the olibanum of commerce and is known to the natives as Koondricum, it is much used as a fragrant incense and (when boiled with oil) as pitch, and is also said to possess stimulant astringent and diaphoretic properties, it is largely used in some parts of India as an application to indolent sores and is supposed to form the chief ingredient in "Wroughton's ointment," it is well deserving of careful attention and can be procured in almost any quantity, the substance is bitter and pungent and is soluble in æther and spirits of wine; in Tamil the tree is called Kungli and Googoolu and Telugu Anduga. I am not acquainted with its timber, but it is said by the natives to be of little or no value.

Analysis.

The drawing is from fresh specimens collected on the Nilgiri slopes, the analysis is from 5 merous flowers (which are most common) but the sepals and petals are sometimes 6-7 and the stamens 12-13.

Fig. i. is a fruit opened, showing the heart-shaped pyrene or nut.
Fig. ii. A nut cut vertically, showing the embryo with unfolded trifid cotyledons (they are sometimes folded.)
Fig. iii. An embryo opened out showing more cut cotyledons than in fig. ii.



Govindoo, del.

Dunphy, Lith.

Boswellia glabra. (Roxb.)

PROTIUM CAUDATUM. (Nat. ord. Burseraceæ.)

PROTIUM, *Wight and Arnot.*—GEN. CHAR. Flowers polygamous, calyx small tubular 4 cleft or dentate, lobes valvate; petals 4 erect, with the apex recurved and the tips incurved, linear oblong slightly imbricate at the sides with the tips incurved in æstivation; disk urceolate 4 lobed lining the bottom of the calyx, margin free, stamens 8-10 inserted below the margin of the disk on the outside alternately shorter, erect free shorter than the calyx in the fertile flower, much longer than the calyx in the sterile flower, the longer ones rising from the back of the lobes of the disk and the shorter ones from or behind the sinuses; ovary sessile 2-4 celled, style very short or obsolete, stigma 3-4 lobed, ovules 2 in each cell collateral pendulous from the apex of the axis, drupe fleshy globose, sarcocarp at length 4 valved with 1-4 bony 1 seeded pyrenes which are connate at first but at length separating, seed oblong, testa membranaceous, cotyledons membranaceous contortuplicate, radicle superior. Small trees without thorns, bearing resin; leaves alternate towards the apex of the branches, 3 foliate or unequally pinnate, panicles long peduncled crowded towards the apex of the branches, flowers small. *WA. Prod. p.* 176. Protionopsis, *Bl. Mus. Bot.* 1. 229.

PROTIUM CAUDATUM. (WA.) A middling sized tree, bark very smooth and of a bright green color, leaves alternate about the extremities of the branches 3-foliate or unequally pinnate, 3-6 inches long, leaflets 1 to 5 pair with an odd one, quite glabrous on both sides, from broadly ovate to lanceolate with a long terminal sharp acumination, about 2 inches long by $\frac{1}{2}$-1 inch broad, petiolules 2-4 lines long, panicles fascicled supra axillary from the young shoots; about equal in length to the young leaves but shorter than the adults, 2-3 times dichotomous, lax, furnished with filiform apiculate bracteoles (2-3 lines long) at the base of the ramifications; petals reflexed but with an incurved tip at the apex, stamens 8 alternately shorter inserted below the margin of the disk on the outside, shorter than the calyx in the fertile flowers, much longer than the calyx in the sterile, the anthers of the shorter filaments apiculate the others rounded, ovary oblong 2 celled, ovules 2 in each cell collateral pendulous from the apex of the axis, stigma subsessile 3-4 lobed, in the male flowers there is a small abortive ovary with a 3 lobed sessile stigma, drupe the size of a small sloe. *WA. Prod. p.* 176. Fl. Brit. Ind. 1. 530

This green barked tree is common in most of our dry subalpine jungles on both sides of the Madras Presidency, and is found in Ceylon all over this Presidency; it is very common as an avenue tree, and a very bad one it makes, as it is bare of leaves for some months towards the end of the cold season and beginning of the hot, the young leaves appearing with the flowers in March. It is curious that it is not mentioned by Roxburgh as it is so abundant in some parts of the Northern Circars; it is called Kondà Màmidi in Teligu and Kilevay in Tamil; the whole tree is very odoriferous, the leaves and bark having a strong grateful fragrance something like mangoes. The tree grows most readily from large cuttings, which is the reason it is so often employed for avenue purposes; the wood is said to be worthless.

The figure is from a drawing executed in the Ceylon Herbarium, and represents fertile flowers. My S. Indian specimens quite tally, except that the leaflets are broader and fewer in number, the stigma generally (always?) 3 lobed, and the ovules pendulous instead of ascending; the latter difference is an error of the Ceylon artist. I have added (figure A.) dissections of the male flower taken from fresh specimens collected in this Presidency.

The South Indian species of Protium and the S. Indian Balsamodendron, must be placed under the same genus; the flowers only differ in the former having a 4 lobed disk and the latter a 6 8-crenated disk, and there is no difference in the fruit; the 2 species of Protium are unarmed with long peduncled panicles. Balsamodendron is armed, and has almost sessile inflorescence, but this would not constitute a generic distinction, and the genus Protium of WA. must lapse.

Govindoo. del. Dumphy, Lith.

Protium caudatum (W.A.)

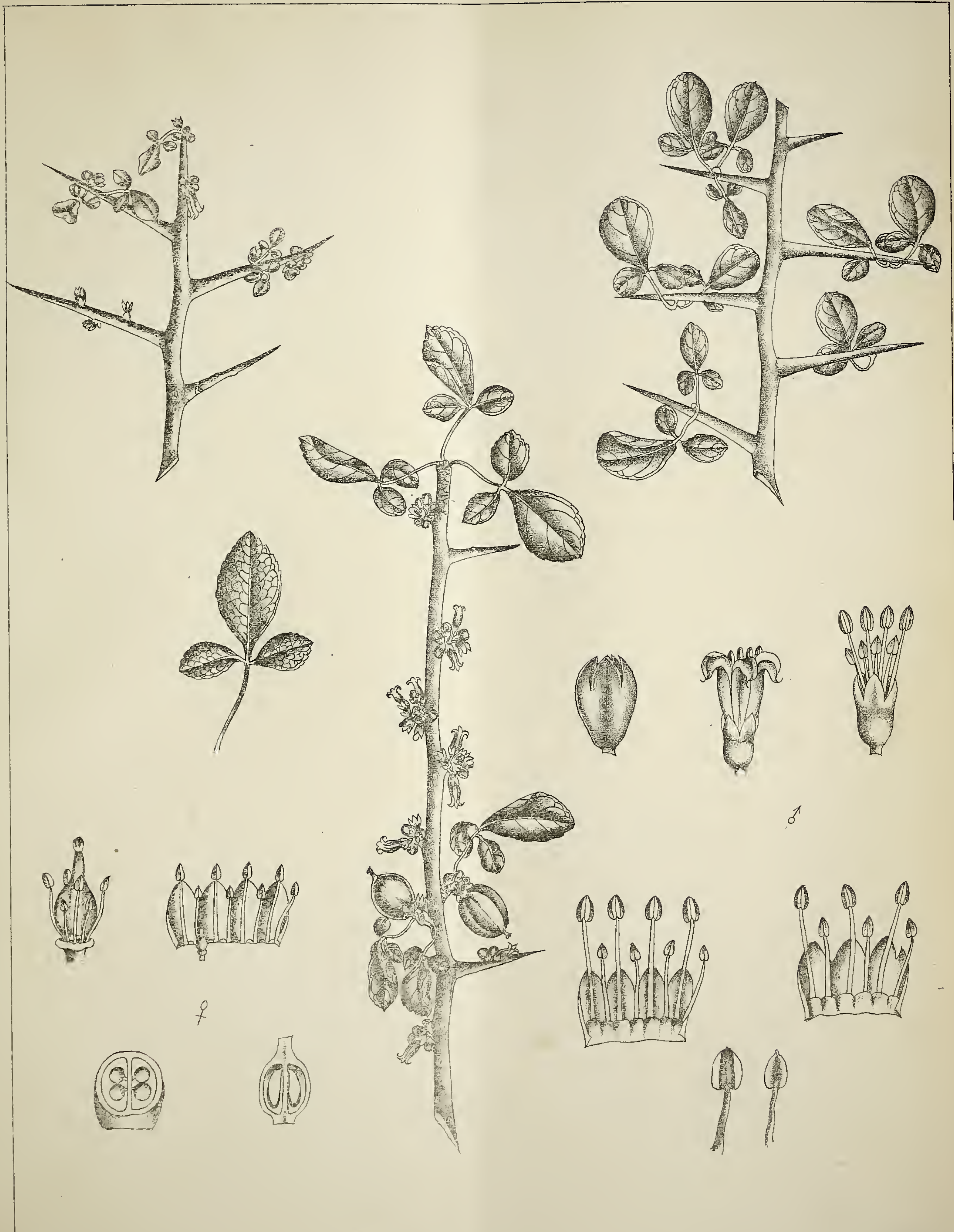
BALSAMODENDRON BERRYI. (Nat. ord. Burseraceæ.)

BALSAMODENDRON, *Kunth.*—GEN. CHAR. Flowers polygamous. Calyx tubular 4 toothed persistent, petals 3-4 erect recurved towards the apex with incurved tips, linear-oblong, the sides slightly imbricate and tips incurved in æstivation, stamens 6-8 inserted outside the margin of the very short 6-8 crenated disk, free, alternately shorter, ovary surrounded by the disk sessile 2-3 celled, narrowed into a longish style, stigma obtuse 4 lobed, ovules 2 in each cell, collateral pendulous, in the male flowers the ovaries are abortive very small or sometimes wanting. Drupe ovoid or subglobose, epicarp 2-4 valved, with 1-3 bony 1 seeded pyrenes, seeds exalbuminous, testa membranaceous, cotyledons contortuplicate sheathing the terete pointed superior radicle. Trees or shrubs yielding resin, generally spinose, leaves alternate 1-3 foliate or unequally-pinnate, flowers small fascicled on thickened nodes or short lateral ramuli or on 1-4 flowered axillary jointed peduncles. *Kunth. in Ann. Sc. Nat.* ii. 348. Heudelotia, *A. Rich. Fl. Seneg.* 150. *t.* 39. Commiphora, *Jacq. Hort. Schœnb. t.* 294. Balsamophleos, *O. Berg. in Bot. Zeit.*

BALSAMODENDRON BERRYI. (Arnt.) A small or middling sized very thorny tree up to 3-4 feet in girth with numerous lateral spinose ramuli nearly at right angles with the branches, leaves more or less fascicled at the extremities or from nodes on the branches or thorn-like ramuli, trifoliate 1-1½ inches long, common petiole ½ an inch long channelled slightly puberulous, leaflets sessile or subsessile at the apex of the petiole cuneate obovate, the terminal one twice as large as the lateral ones, glabrous on both sides from entire or slightly undulate to more or less crenate particularly towards the apex, flowers very small (about 3 lines long) fascicled on nodes on the branches and thorn-like ramuli sessile or subsessile, calyx tubular 3-4 cleft at the apex, corol twice or nearly twice as long as the calyx 3-4 petaled, petals slightly imbricate at the sides with inflexed tips during æstivation, erect in expansion with a recurved apex which terminates in an incurved tip, disk very small (generally rather larger in the male flowers than in the fertile) 6-8 crenated, the crenatures resembling glands, stamens 6-8 alternately shorter, in the male all are very much longer than the calyx and the 3-4 longer ones equal the corol, the anthers of the longer are rounded or subapiculate, and prominently apiculate on the shorter, in the fertile flowers the 3-4 longer ones equal the teeth of the calyx and the others the sinuses only, the anthers are smaller, (and effete ?) ovary large in the fertile flowers attenuated into a rather long style with a 4 lobed stigma, very small (or wanting) in the male flowers, stigma 4 lobed, fruit as in the genus oblong sometimes obtusely angled 6-8 lines long apiculate. *Arnot Ann. of Nat. Hist. vol.* iii. *p.* 85, 86 ;—*Wight, Ill. p.* 185. Protium Gileadense, *WA. Prod.* 176. (exc. syn.) Amyris Gileadensis, *Roxb. Fl. Ind.* ii. *p.* 246 (exc. syn.) Fl. Brit. Ind. 1. 529

This is a good sized tree in the dry jungles to the east of the Nilgiris (Guzzlehatty pass, &c.) covered with flower and fruit in February and March, all over the Presidency it is very common as a hedge plant but seldom flowering in that state, as the inflorescence is either attacked when young by some insect or rendered abortive from a successive propagation from cuttings. The whole tree has a grateful fragrance and a gum-resin exudes from it, the plant makes an admirable hedge.

I have taken the generic character entirely from the Indian plant, the drawing is from fresh specimens collected in the Coimbatore district.



Govindoo, del. Dunphy, Lith.

Balsamodendron Berryi. (Arn.)

CANARIUM BRUNNEUM. (Nat. ord. Burseraceæ.)

CANARIUM, *Linn.*—GEN. CHAR. Flowers hermathrodite or polygamous, calyx urceolate or cupulate 3-5 cleft (rarely only 2) valvate persistent, petals 3-5 as long or longer than the calyx, valvate or imbricate, stamens 8-10 short erect or incurved (6 in some extra-Indian species) inserted on to a long staminal tube, disk obsolete or none, or on the margin or outer side of a fleshy entire or undulate disk, filaments cohering more or less together at the base and with the disk; ovary ovoid 2-3-4 celled, ovules 2 in each cell collateral fixed to the axis, stigma sessile or subsessile, capitate 3-4 lobed, drupe ovoid or ellipsoid often 3 sided with a bony 1 seeded putamen, testa membranaceous, cotyledons contortuplicate, radicle short straight superior. Large trees yielding resin, leaves alternate pinnate with or without stipules, the lowest pair of leaflets occasionally resembling stipules, leaflets opposite entire or crenulate, panicles axillary, flowers small.—Scutinanthe, *Thw.* Colophonia, *Comm.* Pimela, *Lour Fl. Cochin.* Canariopsis, *Blume Mus. Bot.* 1. 222.

CANARIUM BRUNNEUM. (Thw.) A tree 50 or 60 feet high, branchlets and young leaves rufo-tomentose, leaves unequally pinnate 10-20 inches long, leaflets 5-11, oblong slightly oblique acuminate, entire, 4-8 inches long 2-3 broad reddish, petiolules 4 lines long sulcate above, tumid at the base, striated, panicles axillary many flowered tomentose, flowers 3 lines long, sepals 5 erect, petals 5 valvate fleshy coriaceous persistent, the length of the calyx, stamens 10 cohering in the lower part in a ring and consolidated with the base of the calyx and corol, anthers oblong introse, fixed by their back, ovary 2 celled, drupe oblong rufo-tomentose attenuated at both ends about 1 inch long, cotyledons undivided. *Thw. En. Pl. Zey. p.* 410. Scutinanthe brunnea, *Thw. Hook. Journ. of Bot.* viii. *p.* 266. *t.* 8 *& En. Pl. Zeyl. p.* 78.

Ceylon, in the Central provinces, at an elevation of 2,000 - 3,000 *feet, called Mahabulumora.*

[illegible] inivo, del. *Dumphy, Lith.*

[illegible]narium brunneum (Thw.)

CANARIUM STRICTUM. (Nat. ord. Burseraceæ.)

CANARIUM STRICTUM. (Roxb.) A very large tree, polygamous, trunk tall and straight; young branches, petioles, panicles, and costa beneath, densely rufo-tomentose, leaves equally or unequally pinnate 1-4 feet long, by 10-20 inches broad, leaflets brilliant-red when young and densely tomentose on both sides, at length glabrous and shining above, soft and densely tomentose beneath, (the tomentum being reddish on the costa and veins but otherwise whitish) ovate to oblong, acuminate, often very unequal at the base, about 4-7 opposite or subopposite pair with or without a long petioluled odd one, more or less crenulate or serrate particularly when young or subentire, 5-12 inches long by 3-6 broad, petiolules about 3 lines long; panicles axillary densely rufo-tomentose (as is the calyx) a little shorter than the leaves, flowers white crowded towards the apex of the pedicels, calyx cupular 3-4 fid valvate persistent, petals 3-4 more than twice as long as the calyx much imbricate, slightly hairy on the outside towards the apex; male flowers, disk none, staminal tube submembranaceous as long or a little longer than the calyx terminating in 6-8 filaments which are ⅓rd the length of the calyx slightly dilated at the base and attenuated upwards, anthers oblong slightly acute dehiscing longitudinally attached at the back slightly above the base, rudiment of the ovary small 6 lobed glabrous below densely hairy towards the apex; female flower unknown, drupe oval tapering at both ends, putamen hard woody 3 celled.

This very beautiful tree is most abundant in all the moist ghat forests on the western side of the Madras and Bombay Presidencies up to 4,000-4,500 feet, but it does not occur in Ceylon or elsewhere, and it is never seen in dry forests, its brilliant crimson foliage makes it a most beautiful sight when in young leaf, the leaves of saplings and young trees are very much larger than those of adults, the tree is known as the "black dammer" to Europeans and is called Karapu Kungiliam in Tamil; but also receives the names of Googal and Dhup, and in S. Canara Mandà Dhoop, a brilliant black dammer exudes from incisions in the trunk which is a considerable article of trade with some of our hill tribes, this dammer is used medicinally and for various purposes; it is insoluble in cold, but partially soluble in boiling alcohol with the addition of camphor; when powdered it is readily soluble in oil of turpentine, it emits a more resinous smell and burns with more smoke than the Vateria resin, a small piece makes an excellent "fire reviver," the tree flowers early in the year, generally in January or February, but sometimes as late as April. I am not acquainted with the timber.

The following is Mr. Broughton's report upon some of the resin submitted to him for chemical analysis.

This well known substance offers little chance of usefulness in Europe, at least when the many resins are considered that are found in the market at a far less price. It is used in this country for many small purposes, as in the manufacture of bottling wax, varnishes, &c. Its colour when in solution is pale compared with its dark tint when in mass. Though insoluble in spirit, its solution in turpentine forms a tolerable varnish. When submitted to destructive distillation it yields about 78 per cent of oil resembling that obtained from common colophony. But I fear in the majority of its possible applications it possesses few advantages over ordinary resin at 7s. 6d. per cwt. The number of substances suitable for coach varnishes have lately become very numerous in Europe, common resin is now purified by a patent process consisting of distillation with superheated steam, by which it is obtained nearly as transparent and colorless as glass, in such amount that a single firm turns out 60 tons per week.

The figure represents a branch in bud, and nearly the whole of a panicle from a male tree. Fig i. is the stamen tube from a 3 merous male flower; fig. ii. the same from a 4 merous flower; iii. abortive 6 lobed ovary opened out. In the plate are also analysis of the flowers of Canarium commune and C. Zeylanicum (communicated by Dr. Thwaites.)

Govindoo, del:

Dumphy Lith

Canarium strictum (Rox:)

FILICIUM DECIPIENS. (Nat. ord. Burseraceæ.)

FILICIUM. *Thw.*—GEN. CHAR. Flowers polygamous, calyx 5 parted, lobes imbricate, petals 5 small without scales imbricate, disk tomentose 5 lobed, stamens 5 inserted on the disk, filaments filiform, anthers ovate-sagittate, ovary sessile globose 2 celled (sterile in the male flowers), style short uncinate, stigma simple or slightly 2 lobed, ovules solitary in the cells pendulous from the apex, drupe fleshy with a membranaceous putamen 1-2 celled 1-2 seeded, seed oblong, testa membranaceous, embryo exalbuminous curved, cotyledons foliaceous plicate, radicle dorsal directed towards the hilum and nearly reaching it. A tree, leaves alternate coriaceous unequally pinnate, rachis winged, flowers small white panicled. *Thw. En. Pl. Zeyl. p.* 408. Pteridophyllum, *Thw. in Hook. Kew. Journ.* vi. 65. *t.* 1.

FILICIUM DECIPIENS. (WA.) A middling sized tree all the young parts clothed with scurf like scales, leaves when young slightly puberulous in the costa beneath, more or less scaly on both sides and slightly glutinous at length glabrous, unequally pinnate 10-15 inches long by 3½-7 wide, rachis interruptedly winged, the portion between each leaflet tapering at the base and truncated at the apex, leaflets 6-12 alternate or subopposite pair, linear to narrow oblong tapering at the base quite entire or slightly repandulate towards the apex, panicles axillary large shorter than the leaves angled ; flowers, &c. as in the generic character.—Rhus decipiens, *WA. Prod. p.* 172.

This very elegant fern-leaved tree is found more or less throughout the Western ghat forests of the Madras Presidency and in Ceylon, and has been introduced into gardens ; it is very abundant in the moist forests of the Anamallays at about 4000-4500 *feet elevation and also at much lower altitudes, the timber is strong and valuable for building purposes, it flowers in December and January and ripens its fruit in March, in Ceylon it is called Pehimbia.*

The drawing of the branch in fruit is from a specimen collected on the Annamallays. The analysis is from a drawing by Dr. Thwaites. i. *a male flower* ; ii. *the same petals removed* ; iii. *a fertile flower ovary removed* ; iv. *a section of a fertile flower showing the ovules and the position of the stamens.*

Govindoo, del. — Dunphy, Lith.

Filicium decipiens (W.A.)

AGLAIA ROXBURGHIANA. (Nat. ord. Meliaceæ.)

For Gen. Char. see under "Meliaceæ" in the Manual.

AGLAIA ROXBURGHIANA. (WA.) A large tree polygamous, all the young parts more or less scurfy with reddish scales, leaves unequally pinnate 6 inches to 1 foot long, leaflets opposite or alternate 2-4 pair with an odd one, always more or less lanceolate but sometimes obovato-lanceolate to obovate spathulate, quite entire, paler beneath, 2-5 inches long by 1-1½ broad, petiolules 2-6 lines long, panicles axillary all more or less scurfy from much shorter to longer than the leaves, generally longer and more compound in the male, and shortened in the fertile, flowers very small generally a little larger in the fertile, pedicels 1-3 lines long, calyx 5 fid scaly or glabrous and often ciliate, petals 5 often scaly on the outside when young, staminal tube subglobose from nearly entire to 5 toothed or lobed, anthers 5 sessile (but the tube immediately below each anther is often more or less thickened and gives the appearance of there being a regular filament) quite included or their apices slightly protruded above the tube, fruit from nearly globose to pear-shaped.—Milnea Roxburghiana, *WA. Prod. p.* 119. Milnea apiocarpa, *Thw. En. Pl. Zey. p.* 60.

Very common throughout the ghat forests on the western side of Madras Presidency up to 4,000 *feet, and in parts of Mysore, &c., and in Ceylon ; it is very variable in the shape of the leaves and fruit and amount of pubescence, the timber is strong and useful for building, the tree generally flowers in March and April, but I have also seen it in flower at other seasons. Fig A represents a common form (a branch of the fertile tree with dissection of flowers of the male tree). B is a variety from the Tinnevelly hills (Attraymallay ghat) a male tree with dissections of the flowers, this variety has the leaves obovate-spathulate, the dissections are all from male flowers, but the female flower only differs in having a fertile ovary.*

One variety or species in my Herbarium, a large tree from South Canara which I refer doubtfully to this species, has the leaves about 2 *feet long and the leaflets ovate-lanceolate from a broad base* 7 *inches long, male panicles nearly as long as the leaves and very compound, flowers in no way differing from those of Roxburghiana (fig. A), fertile flowers and fruit not seen.*

Fig A is a branch of a fertile tree in young bud and young fruit, and dissections of male flowers (all from the Annamallays). Figure B is a male tree and dissections of the flowers (from South Tinnevelly.)

Govindoo, del.

Dumphy. Lith.

Aglaia Roxburghiana (W.A.)

LANSIUM ANAMALLAYANUM. (Nat. ord. Meliaceæ.)

LANSIUM. *Rumph.*—GEN. CHAR. Flowers diœcious, sepals 5 rounded imbricate, petals 5 rounded connivent imbricate, staminal tube globose crenulate at the mouth, anthers 10 alternately shorter, the apices of the 5 longer ones just exserted, disk inconspicuous, ovary globose 3-5 celled, style very short thick, stigma truncate 3-5 lobed or radiate, ovules 1-2 in each cell fixed to the axis, berry with a rind 5-celled or by abortion 1-4 celled indehiscent, cells 1-2 seeded. Seed solitary or twin collateral oblong, hilum ventral, aril pulpy covering the whole seed, testa coriaceous, cotyledons transverse, radicle superior. Trees, leaves unequally pinnate, flowers small in axillary racemes or panicles or branched spikes, berry yellow or red, aril sometimes edible.—Sphærosacme, *Wall. in part.*

LANSIUM ANAMALLAYANUM. (Bedd.) A good sized tree, leaves 6-9 inches long unequally pinnate, glabrous, leaflets 3-5 elliptic obtusely acuminate, attenuated at the base, entire, 3-4½ inches long by 1½-2 broad, furnished with hairy glands in the axils of the veins beneath, petiolules about ½ an inch long, flowers in axillary panicled spikes, peduncle very short 1-2 lines long, branchlets 2-3 inches long, flowers pentamerous hermathrodite (always ?) yellow, about 2 lines in diameter, sepals imbricate rounded ciliate, with 1-2 minute bracts at the base, petals about twice as large, imbricate, rounded at the apex, stamen-tube obsoletely 5 cleft, anthers 10 alternately shorter, the 5 longer ones just appearing above the apex of the tube, filaments adglutinate to the tube and not separable with the anther, ovary densely strigose sessile on a very small disk, 3 lobed 3 celled, ovules 1 in each cell attached to the axis near the base (or 2 ovules in each cell ?) style very short or obsolete, stigma large obtusely 3 lobed, fruit oblong with a dry greyish rind size of a grape, 2 celled, 2 seeded, seed completely covered with a very succulent aril. *Bedd in Linn. Trans. vol.* xxv., *and Icones Plant. Indicæ tab.* civ.

I formerly described the ovary cells as 2 *ovuled, though I only figured them as* 1 *ovuled; in dissecting several flowers I now find only* 1 *ovule in each cell, but it probably varies.*

A handsome tree, common in the dense moist forest of the Anamallays (particularly in the Anagoondy shola) at an elevation of about 2000 *feet, also in Malabar (foot of the Nilgiris); it flowers early in April, and the fruit ripens in July, the succulent aril in the latter is greedily eaten by monkeys and birds; it is the only species of the genus found in the Peninsula, one species occurs in the Himalayas and a third in Java.*

Govindoo, del. Dunphy. Lith.

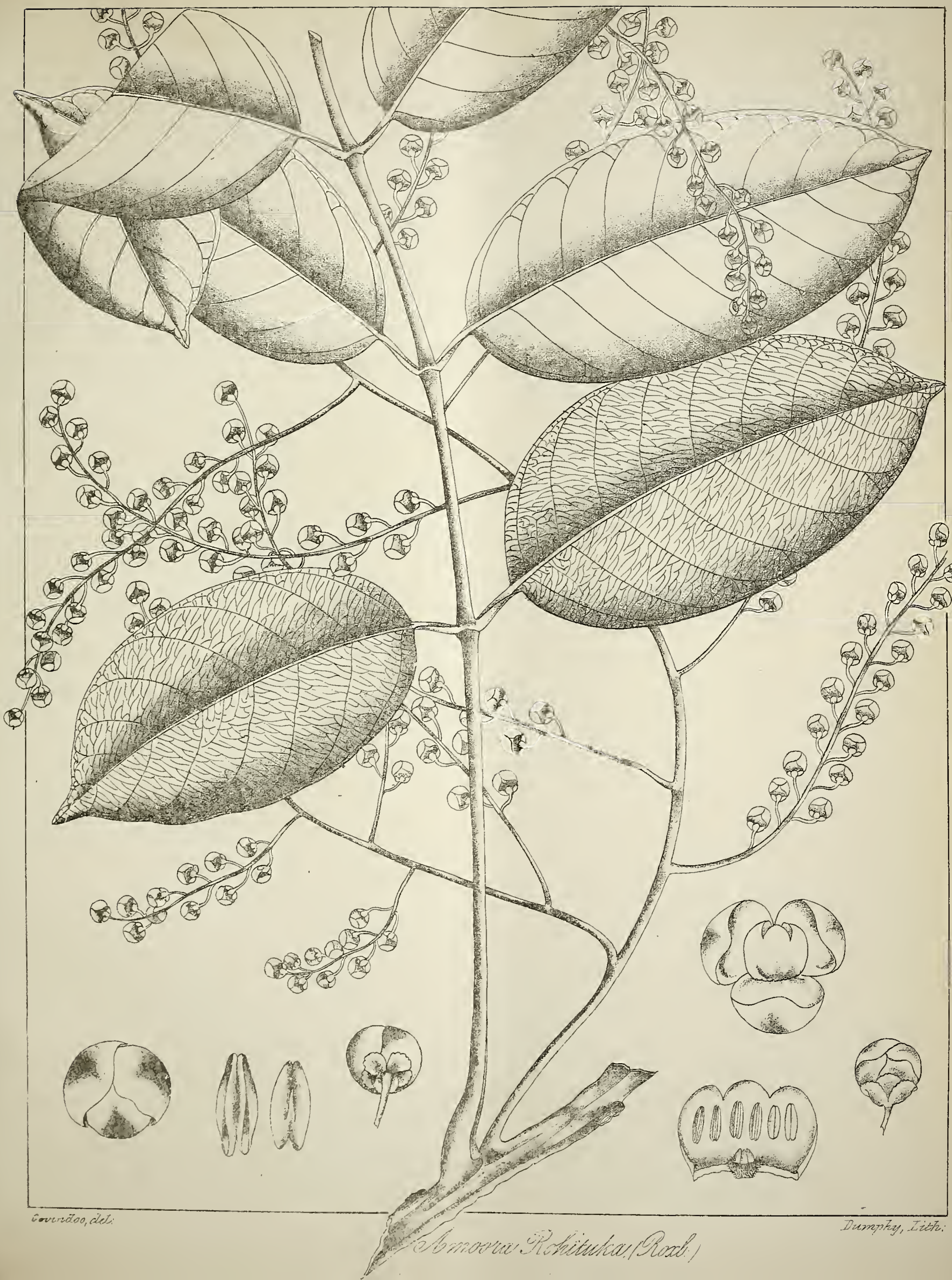
Lansium Anamallayanum. (Bedd.)

AMOORA ROHITUKA. (Nat. ord. Meliaceæ.)

For Gen. Char. see under this genus in the Manual.

AMOORA ROHITUKA. (Roxb.) A small or middling sized tree, polygamous, trunk pretty straight, bark smooth ash colored, leaves alternate unequally pinnate 1-2 feet long, leaflets 4-8 pair opposite obliquely oblong glabrous shortly pointed at the apex 3-6 inches long by 2-2$\frac{3}{4}$ broad, petiole less than $\frac{1}{2}$ an inch long slightly pubescent when young at length glabrous inflorescence axillary, panicled on the male tree, and spiked on the fertile. Male panicles axillary or a little above the axils somewhat drooping very large and much branched, but shorter than the leaves, flowers numerous, pedicels 2-3 lines long, calyx 5 parted imbricate, petals 3 oval to orbicular concave imbricate, stamen-tube globular bluntly 3 lobed at the apex, anthers 6 sessile included, or with the apices just appearing at the mouth of the tube attached by the centre of their back to the tube, a small rudiment of an ovary hairy at the base and 3 lobed at the apex, fertile spikes $\frac{1}{2}$ or a little more than half the length of the leaves, flowers as in the male except that they contaiu a fertile ovary which is 3 celled with 2 ovules in each cell superposed and attached to the middle of the axis, stigma subsessile 3 lobed, lobes emarginate, capsule round reddish 1$\frac{1}{2}$ inches in diameter a little attenuated at the base, 3 celled 3 valved opening from the apex, seed oblong with a brown testa enclosed completely in a fleshy scarlet aril.—Andersonia Rohituka, *Roxb. Fl. Ind.* ii. 213.

This tree is met with sparingly throughout the Western ghat forests of the Madras Presidency up to 3500 *feet elevation in Bengal and in Ceylon (where it is called Hingoot), it is rather common in the Anamallays, an oil is extracted from the seed in Bengal. The specimen figured and the dissections are all from a male tree gathered in the Anamallay hills.*



Govindoo, del. Dumphy, Lith.

Amoora Rohituka, (Roxb.)

AMOORA LAWII. (Nat. ord. Meliaceæ.)

For. Gen. Char. see letter press to Pl. cxxxii.

AMOORA LAWII. (Wight.) A middling sized tree, all the young parts and the inflorescence scaly with yellowish brown leprous scales, leaves unequally pinnate generally about 8 inches each way, leaflets 2-3 opposite or alternate pair with a terminal odd one, leaflets lanceolate acuminate about 4 inches long by $1\frac{1}{2}$ broad, petioles 2-3 lines long, panicles axillary much branched, calyx scaly more or less 4-toothed, petals 4, one of which is much narrower than the others, stamen-tube orbicular subentire or crenated at the apex, anthers 8 rarely only 7, attached by the back near the base to an evident filament which is adglutinate to the calyx tube and rises from nearly its base, ovary scaly, 3-celled, cells 1 ovuled, ovules attached to the axis a little above the base, stigmas 3 sessile, fruit (immature) pear-shaped size of a plum indehiscent? abounding in white resinous juice.—Nimmonia Lawii, *Wight. Cal. Journ. of Nat. His.* vii. 13. Nemedra Nimmonii, *Dalz. in Bomb. Flora. p.* 37.

A middling sized tree, Bombay and Canara ghat forests, and probably elsewhere on our western chain of ghats; called Boorumb in the Bombay Presidency.

Govindoo, del. Dunphy Lith.

Amoora Lawii (Wight)

HEYNEA AFFINIS. (Nat. ord. Meliaceæ.)

HEYNEA. *Roxb.*—GEN. CHAR. Calyx short, 4-5 cleft imbricate, petals 4-5 oblong erect imbricate, staminal-tube deeply 8-10 cleft, divisions linear sharply 2-toothed at the apex and each bearing an anther between the teeth, anthers slightly exserted, disk fleshy annular, ovary immersed in the disk depressed, 2-3 celled, style short thickened upwards and clubbed at the apex, stigma 2-3 toothed, cells of the ovary 2 ovuled, ovules pendulous from near the apex of the axis, collateral. Capsule fleshy 1 celled 2 valved, 1 seeded, seed arillate, radicle superior. Trees or shrubs, glabrous or pubescent, leaves unequally pinnate, leaflets opposite, panicles axillary long peduncled, corymbose, flowers small.

HEYNEA AFFINIS. (Juss.) A middling sized tree, glabrous, leaves unequally pinnate 12-20 inches long by 10-16 broad, leaflets 3-4 opposite pair with a terminal long peduncled odd leaflet, glabrous above, beneath white and glaucous, but also glabrous except a few distant white hairs on the costa and over the surface (only visible with a lens), obliquely ovate to oblong very unequal at the base and ending in a long terminal very sudden acumination, 4-8 inches long by $2\frac{1}{2}$-$3\frac{1}{2}$ broad, the parallel primary veins very prominent beneath, petioles from less than $\frac{1}{4}$ to $\frac{3}{4}$ inch long (terminal one $1\frac{1}{2}$ inches,) panicles axillary about $\frac{2}{3}$rds the length of the leaves, corymbosely branched at the apex of the long glabrous peduncle, branches minutely pubescent and furnished with minute hairy bracteoles at the branchlets, flowers white about 2 lines long, calyx corol and staminal-tube pubescent, anthers yellow obtusely apiculate, fruit oblong or roundish about 6 lines long by 5 broad bursting when ripe into 2 valves disclosing the solitary seed surrounded by its aril. *Ad. de Juss. in Mem. Mus.* 19. Heynea trijuga, *Roxb. Fl. Ind.* ii. 390 ?

A very ornamental tree, common in many localities on the western mountains of the Madras Presidency, from 2000 *feet upwards (Conoor* 6000 *feet, abundant, Bolampatty valley* 3000 *feet, very abundant.)*

PL. CXXXIV.

Govindoo del. Dunphy Lith.

Heynea affinis (Juss.)

BEDDOMEA SIMPLICIFOLIA. (Nat. order Meliaceæ.)

BEDDOMEA. *Hook. fil.*—GEN. CHAR. Calyx 5-6 partite, lobes broadly ovate imbricate, petals as many orbicular, equal in size, or the interior smaller, much imbricate : stamen-tube short or globose, crenulate at the apex, anthers 5-6 sessile at the apex of the tube partially or almost wholly exserted, connective very thick, cells narrow marginal at length confluent at the apex ; ovary short hirsute more or less immersed in an inconspicuous disk 3-celled, cells 2 ovuled, ovules collateral attached to the axis at or a little above the middle, style short thick, stigma 3 lobed pyramidal, fruit coriaceous oblong or ovate or subglobose often acute at the apex, more or less ribbed and densely covered with close-set scurfy and stellate tomentum, tardily dehiscent 2-3 celled but the partitions very thin and often obsolete, seeds 3-5 large more or less angled exarillate, cotyledons superposed, radicle centripetal. Trees or shrubs with more or less scurfy pubescence, leaves simple trifoliate or pinnate, leaflets entire, opposite or alternate, flowers in axillary panicles or racemes or solitary in the axils.

BEDDOMEA SIMPLICIFOLIA. (Bedd.) A tree up to 3 feet in girth and 25 in height, young parts furnished with scurfy scales, leaves from lanceolate to broadly elliptic more or less acute slightly scurfy when young, at length quite glabrous 3-6 inches long by $1\frac{1}{4}$-$3\frac{1}{4}$ broad, veins parallel and prominent beneath, petioles $\frac{1}{2}$-$\frac{3}{4}$ inch long much thickened at the apex (but not apparently jointed,) flowers very variable in size from $1\frac{1}{2}$ to nearly 5 lines in diameter, panicles or racemes from much shorter than the leaves to filiform and much longer or the flowers are occasionally solitary in the axils, pedicels 1-3 lines long, pubescence of the panicle and calyx from densely rufo-tomentose to scurfy, flowers 5-6 merous, petals equal or subequal orbicular slightly scaly in the centre of the back, stamen-tube in the paniculate and racemed flowers large globose crenated at the apex the inside sometimes furnished with prominent corrugations, anthers with a very large thickened connective, attached by their back near the apex of the tube, and partly exserted ; in the solitary flowers the staminal tube is smaller plane inside and the anthers cover the whole length of the tube the apices being slightly exserted, ovaries of both flowers as in the genus and furnished with ovules, fruit oblong size of a pigeon's egg more or less acute, densely rusty-tomentose.

Vary. α. racemes much shorter than the leaves, flowers large 4-5 lines in diameter, rufo-tomentose.

Wynad, Tinnevelly hills and Travancore, 2-4000 feet.

Vary. β. parviflora, panicles very small not much longer than the petioles, flowers 1-2 lines in diameter, rufo-tomentose.

Annamallay hills and Pulney Hills, 3-4000 feet.

Vary. γ. racemosa, racemes filiform longer than the leaves, pubescence scurfy.

Wynad, Coorg and South Canara.

It was only after a long acquaintance with all these forms in a growing state that I made up my mind to unite all the simple leaved forms of Beddomea under one species. All the varieties occasionally have solitary axillary flowers which differ a little in their anthers, but as the fruit is always solitary in the axils, it is probable that these are the only truly fertile flowers, though all the flowers have ovules in the ovaries. Vary. γ. resembles B. Indica in its racemes, but its staminal tube and anthers are the same as the other varieties of this species. The species figured is vary. α. (from Travancore). Fig. 1 gives the front and back view of the petals. Fig. 2 front and side view of the anthers. Fig, 3 the staminal tube and anthers of the panicled and racemed flowers. Fig. 4 the stamen tube of the solitary axillary flowers. At the top of the plate I have given dissections of the flowers of B. Indica (*Hook. fil.*) vide Manual. A. B. and C. are front, back and side view of one of the anthers.

The different varieties are all small trees and very common throughout the Western ghat forests from Canara down to Cape Comorin.

Govindoo, del.

Dumphy, Lith.

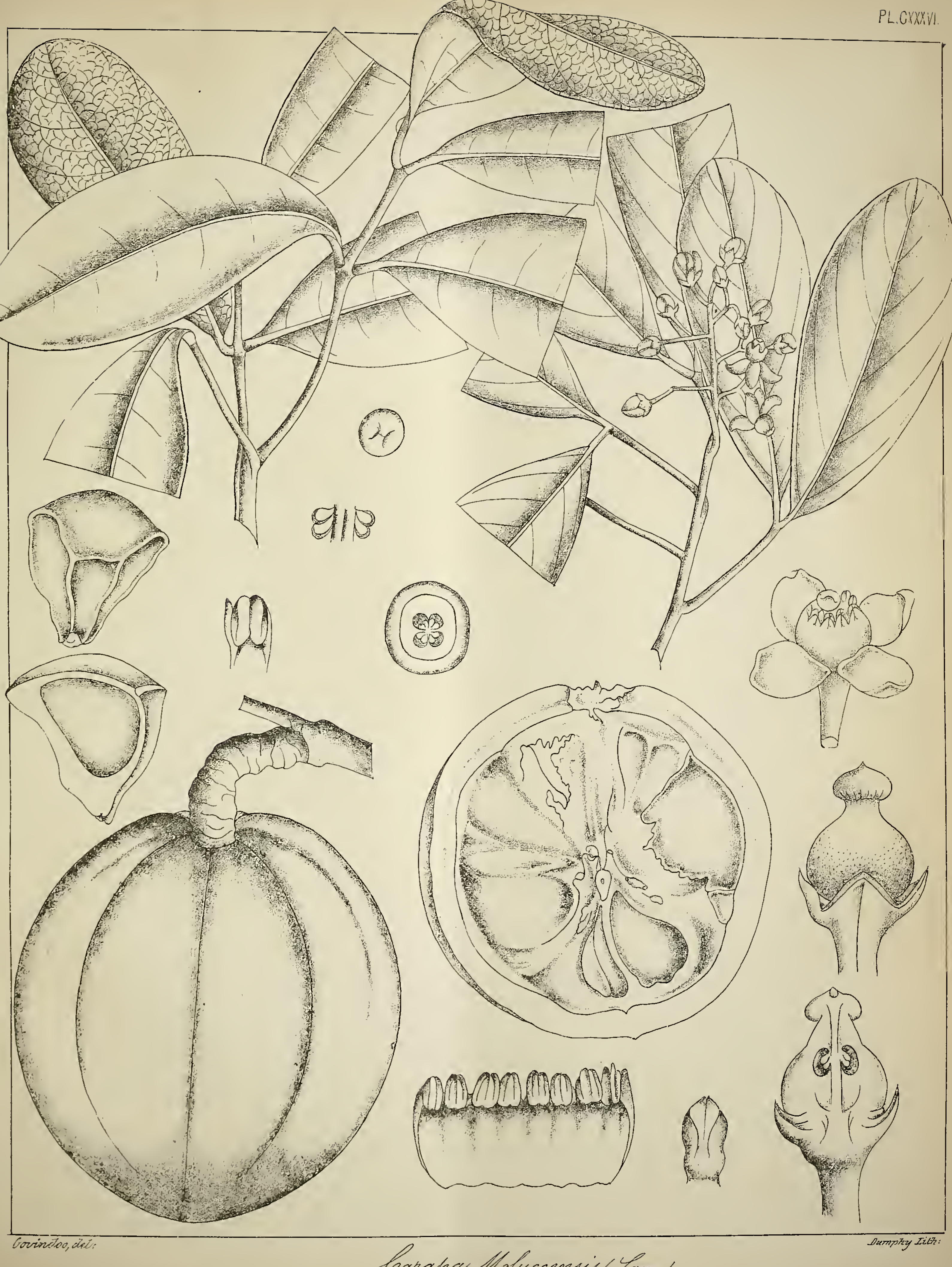
Beddomea simplicifolia. (Bedd.)

CARAPA MOLUCCENSIS. (Nat. ord. Meliaceæ.)

CARAPA. *Aubl.*—GEN. CHAR. Calyx small, 4 or 5 lobed. Petals 4 or 5 free, imbricate in the bud. Staminal tube urceolate, crenate or lobed, anthers 8 or 10, within the summit. Disk thick surrounding the ovary. Ovary 4 to 5-celled, with 2 to 6 ovules in each cell, style short, with a large disk-like stigma. Capsule globular or ovoid, fleshy or woody, the dissepiments often disappearing. Seeds several in a compact mass round the remains of the central axis, large, thick, with a ventral hilum; testa spongy; cotyledons superposed often united; radicle dorsal. Maritime trees. Leaves pinnate with entire leaflets. Panicles axillary.—Xylocarpus, *Kœn.*;—*Benth. Fl. Aust.* 1. *p.* 386. Persoonia, *Willd. Sp. Pl.* ii. 331. Touloucouna and Racapa, *Rœm Synops.* 123.

CARAPA MOLUCCENSIS. (Lam.) A tree glabrous in all its parts. Leaflets 4, rarely 2 or 6, opposite, ovate, obtuse, shortly acuminate or rarely acute, 2 to 3 or rarely 4 inches long, somewhat coriaceous, reticulate. Panicles short, loose, and few flowered, sometimes reduced to simple racemes or with few divaricate branches. Calyx small, irregularly lobed. Petals 4 or rarely 5, 2½ to 3 lines long. Staminal tube crenate or splitting into short lobes. Ovary very small, in the centre of a large thick depressed disk. Ovules 2, 3, or 4 in each cell, excessively minute. Fruit often 3 or 4 inches diameter, irregularly globular. Seeds usually 4 to 6, large irregularly shaped, closely packed; testa very thick, of a hard spongy consistence.—Xylocarpus granatum, *Kœn*;—*Willd. Spec. Pl.* ii. 328;—*Benth. Fl. Aust.* 1. *p.* 387.

This tree is a native of the coast in Malabar, Ceylon and in the Sunderbunds, and is also found in Africa, Australia, Madagascar and the Malay Archipelago; in Tamil it is called Kandalanga, and in Ceylon Kadul. The drawing and dissections are communciated by Dr. Thwaites.



Govindoo, del. Dumphy Lith:

Carapa Moluccensis (Lam.)

STROMBOSIA CEYLANICA. (Nat. order Olacineæ.)

STROMBOSIA. *Blume.*—GEN. CHAR. Calyx limb small, 5 lobed; lobes broadly ovate or deltoid rotundate, in fruit enlarged, adnate. Petals 5, perigynous, valvate. Stamens as many as and opposite and adnate to the petals, filaments shortly free above, ovary broad, inserted upon a disk or semi-immersed or altogether immersed, 3-5 celled nearly to the apex; style short; stigma obtuse, slightly thickened, obscurely lobulate; ovules pendulous, 1 in each compartment. Fruit drupaceous. Seed pendulous with a minute embryo within the apex of a fleshy albumen. Glabrous trees. Leaves alternate, coriaceous. Flowers small, in axillary cymes or fascicles, pedunculate or sessile.—Sphœrocarya, *Dalz. A. DC. Prod.* xiv. 629. Lavallea, *Baill.*

STROMBOSIA CEYLANICA. (Gardn.) A large tree, leaves ovate oblong glabrous acute at the apex paler beneath, about 5 inches long by 2 broad, petioles about ½ an inch long, flowers subsessile glomerate on very short scaly nodes which are axillary or on the branches between the leaves, flowers 1-1½ lines long, calyx lobes rounded very small about ⅓ the length of the petals, stigma 4 lobed ovary 4 celled, fruit (immature) pyriform scaly. *Gard. in Calc. Journ. of Nat. Hist. vol.* vi. *p.* 350. Sphœrocarya leprosa, *Dalz. Hook. Jour. of Bot.* iii. 34 and *Bombay Flora, p.* 223. S. Javanica, *Thw. En. Pl. Zeyl.* (not *Blume.*)

Ceylon, Canara ghats, a large timber tree, the wood is white and durable, the drawing and dissections are taken from a Ceylon specimen. Fig. 1. *and* 2 *of the ripe fruit are copied from Blume's figure of S. Javanica, a closely allied species, which differs in its pedunculate inflorescence. I have only a poor specimen of the Canara tree, it appears to be the same, but the style is longer and the stigma entire or 2 lobed.*

Govindoo, del. Dunphy, Lith.

Strombosia Ceylanica, (Garl.)

ANACOLOSA DENSIFLORA. (Nat. order Olacineæ.)

ANACOLOSA. *Bl.*—GEN. CHAR. Calyx small cyathiform truncate denticulate free, unchanged in fruit, disk hypogynous adnate to the ovary increasing in fruit, petals 6 inserted into the margin of the disk, valvate, concave at the base where they embrace the anthers, hairy above, stamens 6 inserted at the base of the petals and opposite to them, anthers ovate, ovary immersed in the disk 1-3 celled generally imperfectly partitioned, style entire or 3 toothed, ovules 2-3 pendulous from nearly the apex of the axis, drupe baccate 1 seeded with a ringed margin near the apex of the adnate disk, putamen crustaceous, embryo small in the apex of fleshy albumen, radicle superior, leaves alternate entire coriaceous, flowers congested in the axils pedicellate.

ANACOLOSA DENSIFLORA. (Bedd.) A lofty tree, branches terete, leaves glabrous shining oblong, obtusely acuminate, rounded at the base, 4-5 inches long by 1½-2 broad, petiole ¼ inch long, flowers 7-20 fascicled in the axils, pedicels about 3 lines long, flowers 3 lines long, pale yellowish very fragrant, calyx with 4-6 minute teeth, petals very hairy within, filaments glabrous, ovary 2-3 celled, style 3 fid. *Bedd. Linn. Trans. vol.* xxv. *p.* 211.

This is a very lofty timber tree which I have only met with in the Anamallays, moist forests at 2000 *feet elevation (Anagoondi shola,) it flowers in November and December, when the boughs are a perfect mass of very fragrant flowers.*

Govindoo del.

Dunphy, Lith.

Anacolosa densiflora, (Bedd.)

LASIANTHERA APICAULIS. (Nat. order Olacineæ.)

LASIANTHERA. *P. de Beauvois.*—GEN. CHAR. Flowers hermaphrodite (or polygamous.) Calyx shortly and broadly 5 lobed. Petals 5 hypogynous, valvate in æstivation. Disk fleshy, unilateral or inconspicuous. Stamens 5, alternate with the petals, free or adnate at the base to the petals; anthers tufted behind with a pencil of soft hairs. Ovary free, 1 celled, narrowed above; stigma minute. Ovules geminate, pendulous. Fruit coriaceous, oblong. Seed pendulous, with a small embryo within the apex of a fleshy albumen. Glabrous trees or shrubs. Leaves alternate entire. Flowers small, capitate; peduncles umbellate, leaf opposed.—Stemonurus, *Blume Bijdr. ex parte.* Urandra, *Thw. in Hook. Kew Jour. of Bot. vol.* vii. *p.* 211.

LASIANTHERA APICAULIS. (Thw.) A very large tree, branches terete glabrous, leaves entire very coriaceous, oblong or obovato-oblong abruptly shortly-acuminate; narrowed at the base paler beneath 4-6 inches long by 2-3 inches broad, petioles 5-8 lines long, peduncles axillary solitary or twice shorter than or about the length of the petiole, capitula 7-12 flowered, flowers hermaphrodite, petals greenish, purple towards the base about 2 lines long, drupe oblong sub acute $1\frac{1}{4}$ inches long more than $\frac{1}{2}$ an inch broad greenish purple, putamen woody with several longitudinal cavities filled with soft cellular matter externally fasciculate fibrous, testa consolidated with the pericarp. *Thw. En. Pl. Zey. p.* 43 *and* 405.

Ceylon in damp forests 1000 *to* 3000 *feet elevation, called Urukanu; the dissections are communicated by Dr. Thwaites.*

Govindoo, del. Dumphy, Lith.

Lasianthera apicalis (Thw.)

APODYTES BENTHAMIANA. (Nat. order Olacineæ.)

APODYTES. *E. Meyer.*—GEN. CHAR. Calyx small 5 toothed or partite, petals 5 hypogynous free valvate glabrous or subglabrous, stamens as many as and alternate with the petals free or very shortly adherent to their base, anthers linear to lanceolate oblong or sagittate, ovary 1-celled, style filiform more or less oblique, stigma small, ovules 2 pendulous sub-superposed, drupe baccate obliquely ellipsoidal or rounded sometimes bearing on one side a fleshy appendage, nut crustaceous or woody, seed 1 pendulous, with a small embryo near the apex of the fleshy albumen. Trees or shrubs, leaves entire alternate penniveined, flowers in terminal panicles or axillary fascicles.—Raphiostyles, *Planch?* Nothapodytes, *Blume. Mus. Bot.* 1. 248.

APODYTES BENTHAMIANA. (Wight.) A middling sized tree young parts minutely aureo-pubescent, branches terete glabrous, leaves alternate coriaceous glabrous (turning quite black in drying) oblong elliptic obtuse at both ends $3\frac{1}{2}$-4 inches long by $1\frac{1}{2}$ broad, petiole $\frac{3}{4}$-$1\frac{1}{4}$ inches long, panicles terminal contracted rigid shorter than the leaves slightly pubescent, bractes minute or wanting, flowers white 3 lines long, calyx minute 5 toothed slightly pubescent as is the pedicel, petals elliptic inflexed at the point, stamens the length of the petals, anthers pubescent on the front face and sides, basifixed linear obtuse, deeply sagittate at the base, ovary glabrous ovate, style lateral straight, stigma inconspicuous truncated, drupe semi-ovate reniform crowned with the persistent base of the style and furnished with a lateral scutelliform appendage. *Wight Icones tab.* 1153. A. Gardneriana, *Miers. Ann. and Mag. of Nat. Hist. series* 2, *vol.* ix. *p.* 389.

Vary. α. Leaves coriaceous obtuse at the apex, panicles short rigid.

Vary. β. Leaves membranaceous, broader than in var. α. with a long narrow acumination at the apex terminating in a sharp or obtuse point, panicles lax and much larger than in variety α.

Variety α.—Nilgiris, Anamallays, Travancore, Tinnevelly hills and Ceylon, elevation 5000-7500 feet. Vary β. northern slopes of the Nilgiris, Travancore (Myhendra coffee estates,) elevation 3,000 feet. The 2 varieties have a very different appearance, and I long thought them distinct, but a careful analysis of the flowers shows no difference, and variety β. may I think be safely considered only a lower level more membranaceous form, it is a much handsomer tree than the variety found at higher elevations. The figure is taken from living specimens of var. α gathered on the Nilgiris.

Govindoo, del

Dumphy, Lith

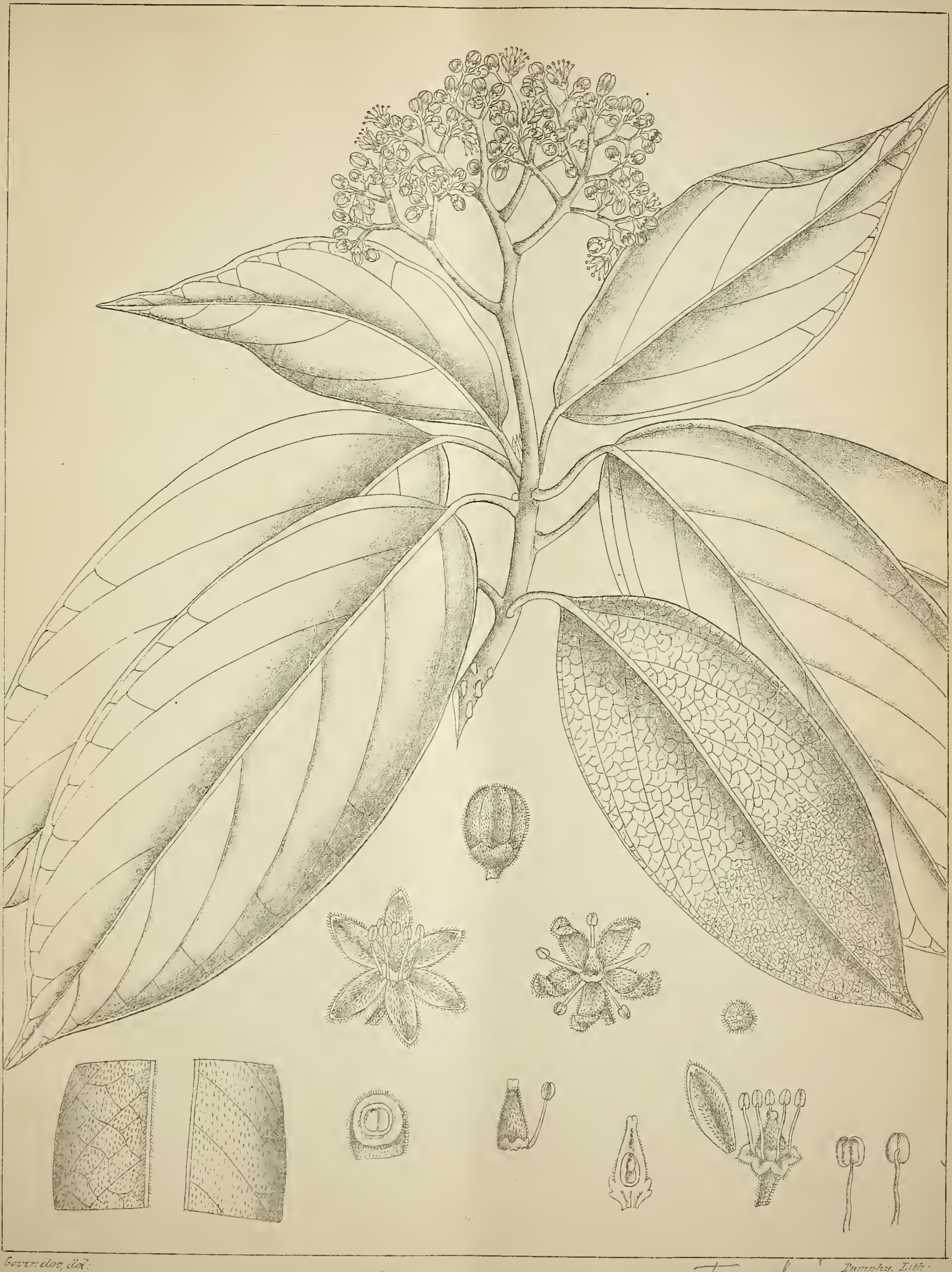
Apodytes Benthamiana (Wight)

MAPPIA FŒTIDA. (Nat ord. Olacineæ.)

MAPPIA. *Jacq.*—GEN. CHAR. Flowers polygamous, calyx small 5 toothed, petals 5 hypogynous valvate villous, stamens 5 hypogynous alternate with the petals, anthers oblong affixed by the back connective often mucrouate, disk cupulate surrounding the ovary or sometimes inconspicuous, ovary 1 celled, style short, stigma thick, ovules 2 pendulous, drupe slightly fleshy with a 1 seeded crustaceous or woody nut, seed pendulous, embryo in the apex of the albumen, radicle superior, cotyledons broad foliaceous. Trees pubescent or glabrous, leaves alternate entire or sinuate, cymes lax terminal corymbose.—Leretia, *Vell.* Stemonurus, *Wight* (not *Blume).*

MAPPIA FŒTIDA. (Wight.) A good sized tree polygamous, leaves elliptic oblong acuminate, pubescent beneath 4-7 inches long by about 2-3 broad, petioles ½-¾ inch long, flowers 3-4 lines in expansion yellowish very fetid, in corymbose terminal panicles, everywhere villous with short hairs, stamens glabrous, style about as long as the ovary, drupe succulent olive-like purple, nut thin. *Wight Icones,* 955. Mappia fœtida, ovata, Gardneriana, et Championiana, *Miers. Ann. & Mag. of Nat. Hist. Ser.* 2 *Vol.* ix. 395-7.

A very common tree in the moist forests of the western side of the Madras Presidency and in Ceylon from no great elevation up to 7-8000- *feet, it is very abundant on the Nilgiris. In Ceylon it is called Gandapaana, the figure is taken from living specimens gathered at Ootacamund.*



Govindoo, del.

Dunphy, Lith.

ILEX DENTICULATA. (Nat. ord. Ilicineæ.)

ILEX. *Linn.*—GEN. CHAR. Flowers unisexual or hermathrodite, calyx small persistent 4-6 cleft, petals 4-6 connate at the base into a rotate corol hypogynous imbricate, stamens as many as the petals and alternate with them and inserted on the corol, anthers oblong, ovary sessile sub globose 4-6 (rarely 7-8) celled, style none or short thick, rarely elongate, stigmas as many as the ovary cells, distinct or combined, ovules 1-2 in each cell collateral, drupe globose, putamen 4-5 celled, or with 4-8 long or crustaceous pyrenes. Trees or shrubs, leaves alternate generally shining entire or toothed or spinose, inflorescence axillary.—Pseudehretia, *Turcz.*

ILEX DENTICULATA. (Wall.) A very large tree glabrous or the young parts minutely puberulous, leaves very coriaceous glabrous and rather shining above, paler beneath ovate to oblong, acute-acuminate or obtuse at the apex serrated, $2\frac{1}{2}$ to $3\frac{1}{2}$ inches long by $1\text{-}1\frac{3}{4}$ broad, petioles $\frac{1}{4}$ to $\frac{1}{2}$ an inch long channelled above, peduncles axillary very short, pedicels numerous minutely puberulous 3-4 lines long simple or again bearing 3 pedicels, flowers tetramerous, petals only connate at their very base at least in the male flowers (I have no fertile flowers for dissection), stamens inserted at the very base of the corol on to the connate portion between the petals. *Wight Ill. tab.* 142.

This large timber tree is not uncommon on the higher ranges of the Nilgiris and Anamallays at 6000 8000 *feet, and at similar elevations in Ceylon, its timber is much valued and is said not to warp or crack, it is at once distinguished from the other species by its serrated leaves and* 4 *merous flowers.*

Govindoo, del. Dunphy. Lith.

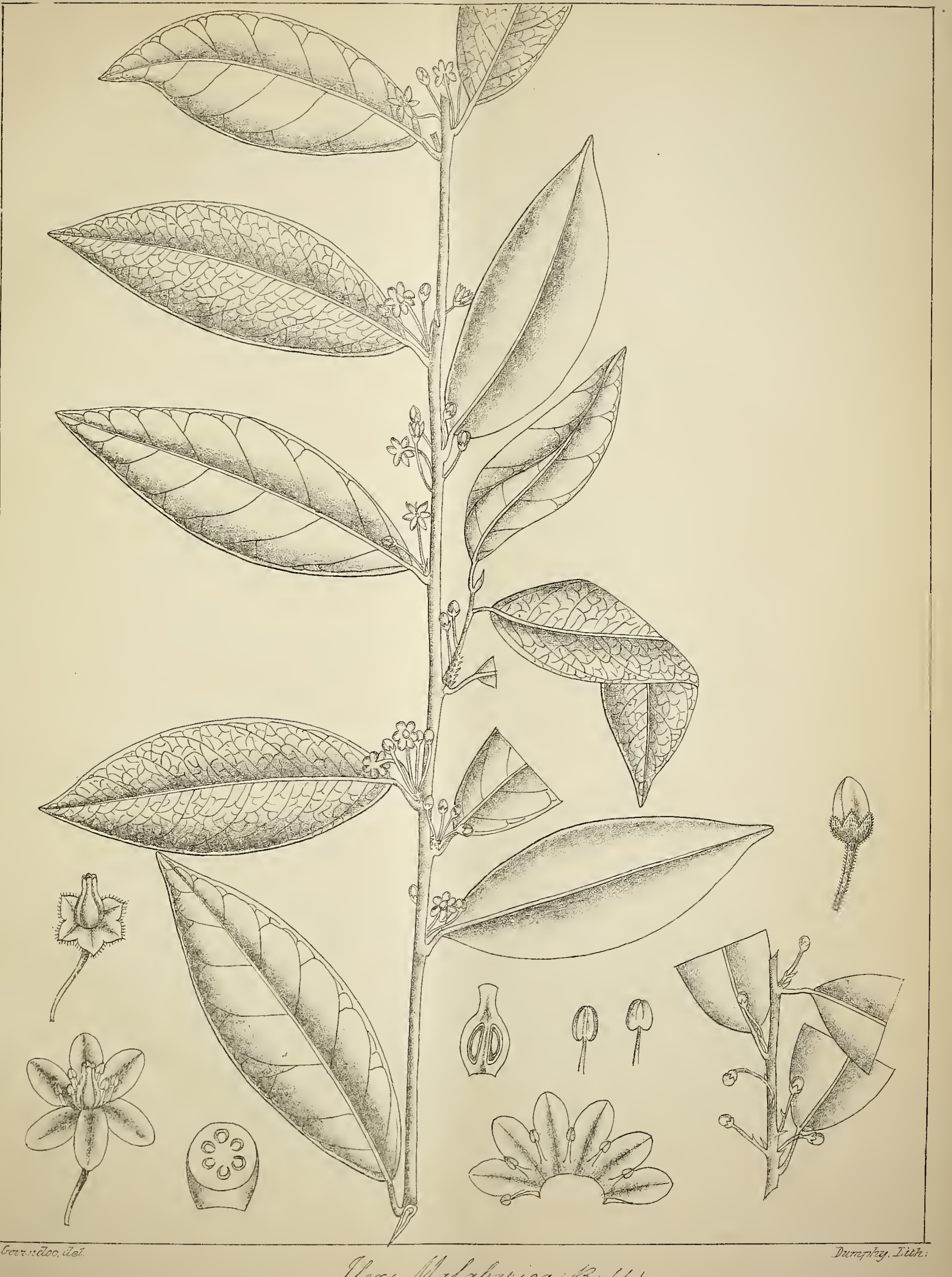
Ilex denticulata, (Wall)

ILEX MALABARICA. (Nat. order Ilicineæ.)

For Gen. Char. see Pl. cxlii.

ILEX MALABARICA. (Bedd.) A large tree glabrous or the young parts minutely puberulous (under the lens) leaves narrow oblongo elliptic slightly attenuated at both ends acute or acuminate at the apex quite entire dark shining green above very pale beneath, 4-5½ inches long by 1-1½ broad, petioles 3-4 lines long channelled above, peduncles axillary very short or almost obsolete, pedicels 3-8 rarely only 1 simple 3-4 lines long slightly pubescent, flowers hexamerous, calyx slightly pubescent, petals connate to nearly ½ their length, ovary minutely puberulous with a large obsoletely 6 lobed stigma, 6 celled, cells 1 ovuled, ovules pendulous from nearly the apex, drupe size of a pea.

This species is at once distinguished from the others by its 6 *merous flowers, the leaves and inflorescence are also different. I have only observed this tree in the Wynad, elevation* 3,000 *feet (but it probably occurs elsewhere in our western forests); it is abundant at Benni between Mudumallay and Sultan's Buttery, it flowers in January and February and probably more or less all the year as the other species do.*



Gorrndoo, del. Dumphy, Lith:

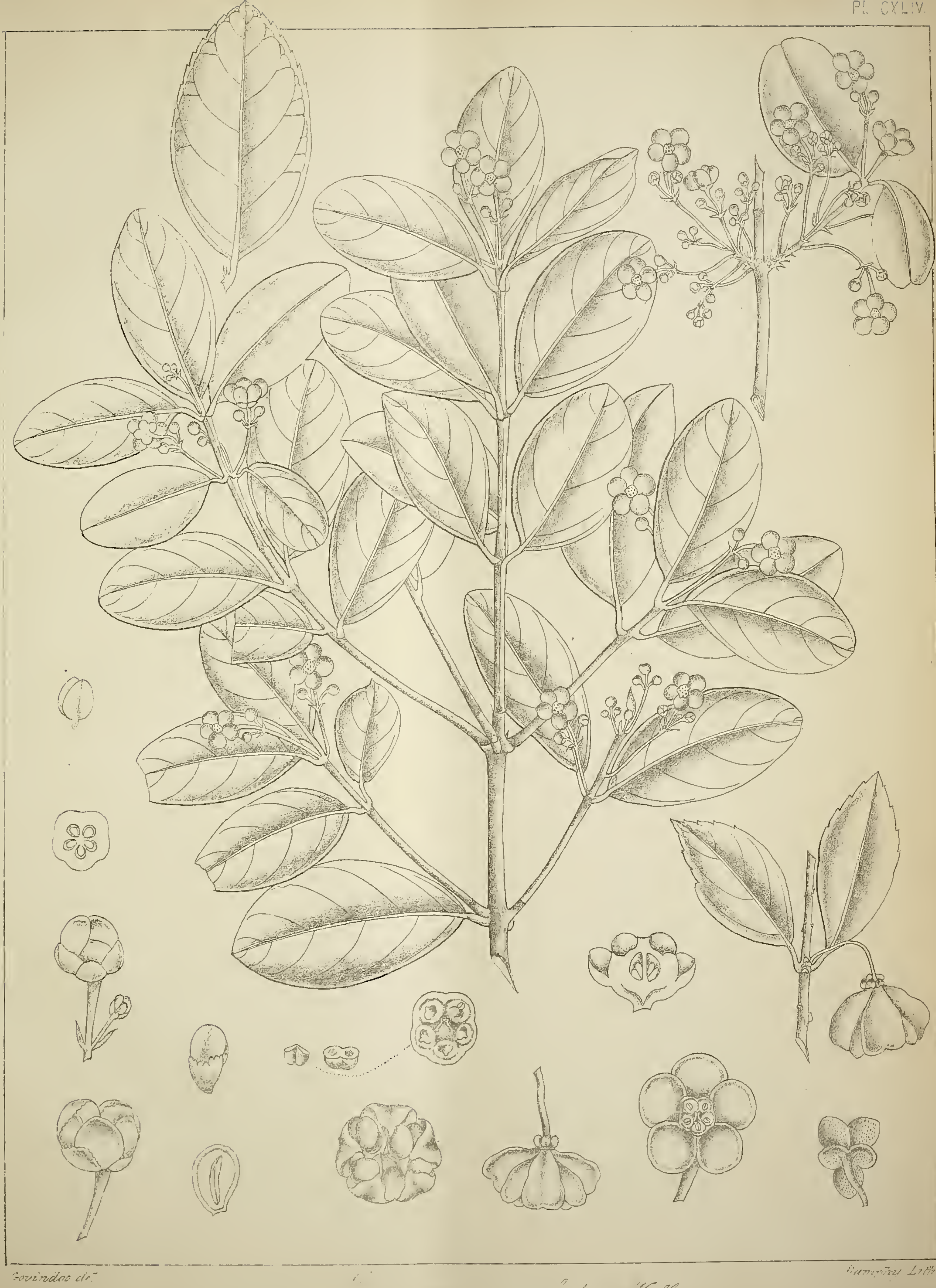
Ilex Malabarica, (Bedd.)

EUONYMUS CRENULATUS. (Nat. ord. Celastrineæ.)

EUONYMUS. *Linn.*—GEN. CHAR. Calyx 4-6-fid, divisions patent or recurved, petals as many inserted below the disk patent entire toothed or fimbriate, stamens the same number inserted on the disk, filaments generally very short, anthers broad didymous, disk fleshy ample 4-5-lobed, ovary immersed in the disk and confluent with it, 3-5 celled, styles short, stigma 3-5 lobed, ovules 2 (rarely 4 or many) in each cell, capsule 3-5 celled with the same number of lobes or angles and opening loculicidally in as many valves, cells 1-2 seeded, seeds nearly enclosed in a colored usually scarlet arillus, testa chartaceous, albumen fleshy, embryo orthotropal, cotyledons foliaceous, radicle inferior. Trees or shrubs, with opposite leaves, flowers dull reddish or greenish in axillary dichotomous or trichotomous cymes.—Melanocorya, *Turcz.* Vyenomus, *Presl. Walp. Ann.* 1. 188.

EUONYMUS CRENULATUS. (Wall.) A small tree, leaves elliptic obtuse crenulate-serrate towards the apex, coriaceous deep shining green above, 2-2½ inches long by 1-1¼ broad, petioles about 3 lines long, peduncles solitary shorter than the leaves once or twice dichotomous few flowered, flowers 5 or occasionally 6-merous, petals orbicular, stamens very short, anthers opening transversely, margin of the torus free, style very short, stigma blunt somewhat umbilicated, capsule turbinate 5 celled, lobed at the apex, seed with a small aril. *WA. Prod. p.* 161.

A small tree common on the Nilgiris, Pulneys and higher parts of Western ghats of the Madras Presidency, the wood is white, very hard and close grained, and answers for wood engraving, and is about the best substitute for Boxwood in this Presidency; the wood of the other species is very similar.



Govindoo del.

Gumprey Lith.

Euonymus crenulatus, Wall.

LOPHOPETALUM WIGHTIANUM. (Nat. order Celastrineæ.)

LOPHOPETALUM. *Wight.*—GEN. CHAR. Calyx scutelliform with a very broad flat spreading base, lobes 5 very short rounded soon obsolete, petals 5 (rarely 4) orbicular, continuous with the disk, either furnished at the base with a membranaceous corrugated crest and covered near the base with the projecting lobes of the disk, or rarely naked, and alternate with the lobes of the disk, disk 5-lobed thick fleshy covering the whole cavity of the calyx, the lobes aduate to the base of the petals, stamens 5 (rarely 4) inserted on to the disk, filaments subulate short, anthers versatile oblong ; ovary small continuous with the disk and sometimes immersed in it, 3 (rarely 4) celled contracted into a short style, stigma capitate, ovules numerous in a double row in each cell, capsule coriaceous 3 (rarely 4) angled, 3 (rarely 4) celled dehiscing loculicidally, seed few or many, often winged, arillate, albumen fleshy. Trees or shrubs glabrous, leaves opposite or alternate, exstipulate coriaceous entire or serrulate, cymes axillary and terminal, flowers often large.

LOPHOPETALUM WIGHTIANUM. (Arnt.) A large tree, leaves elliptic oblong obtuse or slightly acute rounded or subcordate at the base, entire coriaceous glabrous on both sides, 5-9 inches long by 2-4 broad, petioles about $\frac{1}{2}$ inch long, cymes axillary and terminal shorter or nearly as long as the leaves, flowers 5-merous dull-reddish, 7-9 lines in diameter, calyx lobes very short and broad in bud, nearly or quite obsolete in expansion, petals with a membranaceous corrugated crest, ovary continuous with the disk but not immersed, fruit sharply triangular 3-celled, 3-4 inches long, seeds numerous imbricate compressed winged. *Wight Icones tab.* 162.

This tree inhabits the Western ghats of the Madras Presidency from Canara down to Cape Comorin, and is also found on the Bombay ghats ; it grows to a very large size and is a very handsome tree. The drawing is taken from specimens collected in the moist forests in the plains of South Canara (at Parapa), but it also ascends the ghats to an elevation of 3000 *feet ; it is called Balpâle in S. Canara, and its timber is much esteemed by the natives.*

Analysis.

1. A young bud.
2. The same, more advanced.
3. A flower, front view.
4. The same, back view.
5. Anthers, front and back view.
6. Ovary cut vertically.
7. The same cut horizontally.
8. A very young fruit cut open, petals and stamens still persistent.
9. A winged seed (very immature.)

Covindoo, del. Dunphy, Lith

Lophopetalum Wightianum (Arn.)

KOKOONA ZEYLANICA. (Nat. order Celastrineæ.)

KOKOONA. *Thw.*—GEN. CHAR. Calyx small 5 lobed, petals 5 coriaceous, coutorted in æstivation, glanduloso-punctate, stamens 5 inserted near the margin of the disk, filaments thick, subulate, anthers oblong, disk thick, glandular obscurely angled, ovary semi-immersed in the disk 3-celled, styles short thick, stigma 3-lobed, ovary-cells 4-12 ovuled, ovules in 2 series adnate to the axis, ascending, capsule rather woody oblong trigonal, 3-celled 3-valved dehiscing loculicidally, seeds imbricate furnished with a long wing, cotyledons plane, embryo exalbuminous. Large ramous glabrous trees, leaves opposite petioled coriaceous, cymes axillary paniculate, flowers small. *Thw. in Hook. Kew Journ.* v. *p.* 379. Trigonocarpus, *Wall, Cat.* 6250.

KOKOONA ZEYLANICA. (Thw.) A large tree, leaves obovate or retuse narrowed towards the petiole obscurely and remotely crenulate, glabrous, minutely punctate beneath, 2-4 inches long by $1\frac{1}{4}$-$1\frac{3}{4}$ broad, capsule about 4 inches long, seeds $3\frac{1}{2}$ inches long of which the wing is $2\frac{1}{2}$. *Thw. l. c. and En. Pl. Zey. p. 52.*

A large tree peculiar to Ceylon, not uncommon on banks of streams in the Suffragram and Ambagamowa districts at an elevation of 2000-4000 *feet, called by the Singhalese Kokoon; the inner yellow bark is employed medicinally and an oil is expressed from the seeds, which is used in lamps. A second species of this genus inhabits Borneo. The analysis in the drawing is from the pencil of Dr. Thwaites.*

1. Ovules. 2. Young seeds. 3. Full grown seed, life-size.

Wannapottie at Porey, & hence Wannaputtie [illegible]
[illegible] at Porey have accuminate [illegible]
[illegible] as not [illegible]

Govindoo del. *Dunphy Lith.*

Kokoona Zeylanica (Thw.)

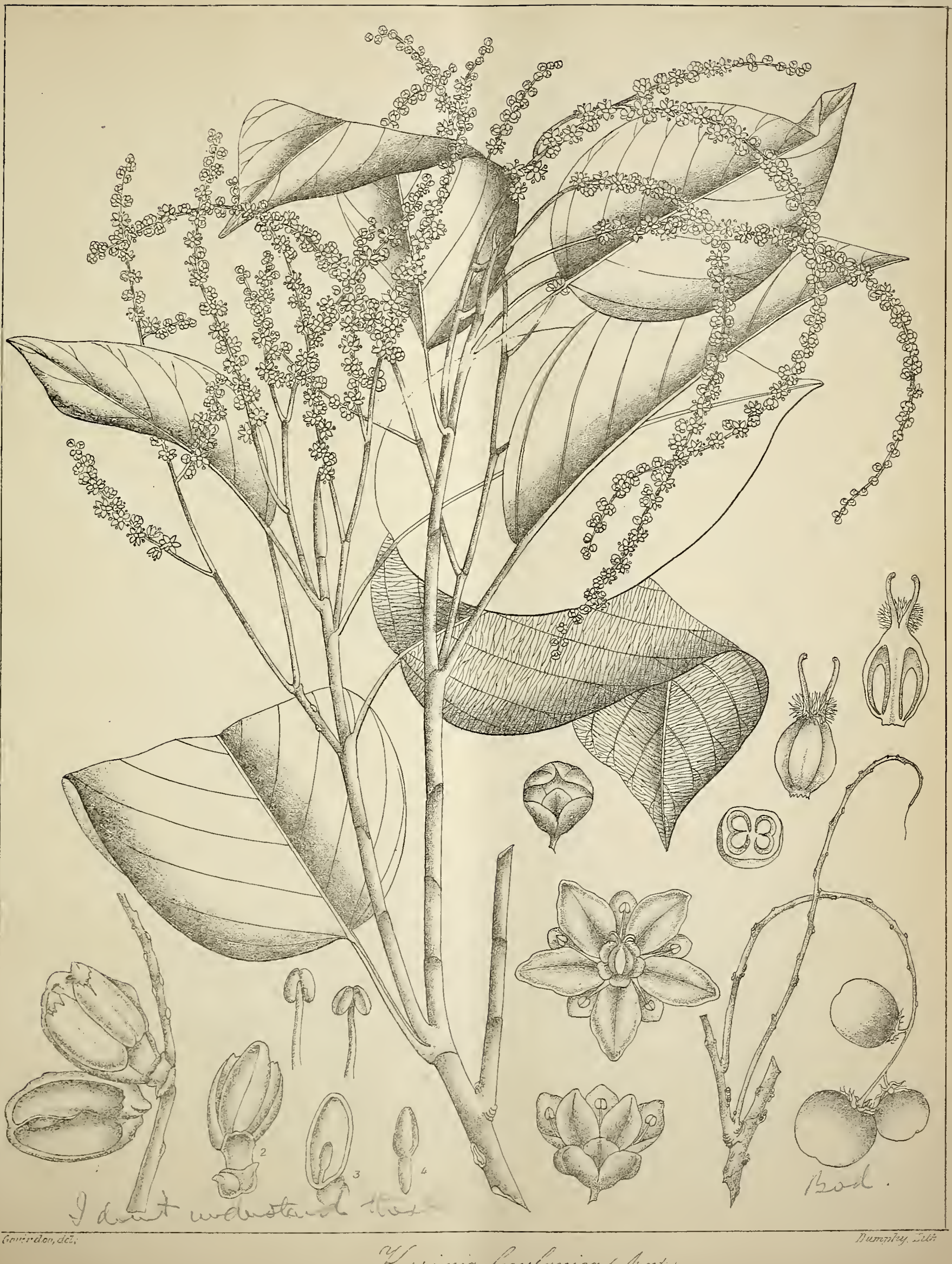
KURRIMIA CEYLANICA. (Nat. order Celastrineæ.)

KURRIMIA. *Wall.*—GEN. CHAR. Calyx 5-fid, petals 5 inserted under the margin of the disk patent and recurved. Stamens 5 inserted with the petals, filaments short subulate, anthers didymous, disk fleshy 5-lobed, ovary globose free glabrous except at the apex where it is very hairy, 2-celled, cells 2-ovuled, styles 2 filiform, stigmas small capitate, ovules erect from the base of the cells, capsule 1-2 celled coriaceous indehiscent, or at length 2-valved, 1-2 seeded, partition membranaceous, seed linear-oblong erect nearly quite enclosed in a fleshy aril, testa coriaceous shining smooth, albumen copious fleshy, embryo axil much compressed, cotyledons linear-oblong, radicle elongate inferior. Trees glabrous, the apices of the branchlets enclosed in stipules which are soon deciduous, leaves alternate towards the apex of the branches, petioled coriaceous entire shining penniveined with transverse striated veinlets, racemes axillary simple or panicled, flowers small yellowish, aril white or reddish. *Wall, Cat.* 4334;—*Benth. and Hook. Gen. Pl.* 1 *p.* 365. Bhesa, *Ham. in Ed. Phil. Journ.* xvi. 315, *ex parte.* Pyrospermum, *Miq.*

This genus differs from Trochisandra in its free stamens and in the shape of its capsules.

KURRIMIA CEYLANICA. (Arnt.) A large tree, branches terete glabrous their apices acute and encircled with the large stipules which are soon deciduous, leaves ovate acute glabrous and shining 3-6 inches long by ½-3 inches broad, petiole ½-1½ inches long, panicles elongate longer than the leaves or contracted and shorter than them, flowers small pale-greenish, capsule oblong or rotundate, fleshy coriaceous ¾ inch long reddish, seed oblong, aril white, testa membranaceous brown. *Arnt. Pug. X.* 328;—*Thw. En. Pl. Zey. p.* 72.

A large tree, peculiar to Ceylon, from the plains up to 5000 *feet elevation; the higher level form has shorter panicles and larger flowers. The tree is known by the names Palang, Hoorakandu and Alareya. The plant figured is from no elevation; the dissections of the fruit, figs.* 1 *to* 4, *are from the pencil of Dr. Thwaites.*



Govindoo, del. Dumphy, Lith.

Kurrimia Ceylanica (Arn:)

ELÆODENDRON ROXBURGHII. (Nat. order Celastrineæ.)

ELÆODENDRON. *Jacq. fil.*—GEN. CHAR. Flowers polygamous or hermathrodite, calyx 4 or 5 (rarely 3) cleft, petals as many as the calyx segments spreading, disk thick fleshy angled, stamens as many as the petals inserted under the edge of the disk, filaments subulate, anthers nearly globular dehiscing longitudinally, ovary more or less deeply immersed or confluent with the disk 2-3 (rarely 4-5) celled, style very short, ovules 2 in each cell, drupe dry or succulent, the putamen 1-3 celled, cells 1-2-seeded, arillus none, testa membranaceous or spongy, albumen scanty or copious, cotyledons flat. Trees or shrubs, usually quite glabrous, leaves coriaceous opposite or alternate entire or crenate, flowers small yellowish greenish or white in axillary cymes or umbels.—Neerija, *Roxb.* Schrebera, *Retz.* Rubentia, *Commers.* Portenschlagia, Trattinick, Crocoxylon and Mystroxylon, *Eckl.*

ELÆODENDRON ROXBURGHII. (WA.) A tree often of great size, leaves opposite and alternate elliptical to ovate or even subrotundate, generally bluntly crenated sometimes sharply serrated, very coriaceous, glabrous and shining above, 3-4½ inches long by 1½-2½ broad, petioles ¼ to 1 inch long, cymes axillary often lax with or without a solitary caducous flower in the forks; from ⅓rd as long to nearly as long as the leaves, flowers yellowish or green 4-5-merous, ovary 2-celled, drupe obovoid with a 1-celled putamen. *WA. Prod. p.* 157. Neerija dichotoma, *Roxb. Fl. Ind.* 1. *p.* 647. Elæodendron paniculatum, *WA. Prod. p.* 157.

This tree is found throughout this Presidency and in Bombay and Bengal, it is most variable as to size, and in the size, shape and margin of the leaves. In the dry Seegoor forests about the foot of the Nilgiris it is found of immense girth, and in the moist forests of the Anamallays at 2000 *feet elevation it is a very large tree, again in the Coimbatore plains it is met with as only a shrub with sharply serrated leaves (but differing in no other way); the tree is called Karkavà and Irkuli in Tamil, Nirija and Neràdi in Teligu, and Tamrooj on the Bombay ghats; the wood is not very strong or stiff, but is tough, close and even grained, and the surface beautifully curled and flowered and of a reddish brown color, and suited for cabinet work; it is used by the natives for the manufacture of combs, &c., and is suited for picture frames, &c.; a cubic foot unseasoned weighs* 60-65 *lbs., and* 46 *lbs. when seasoned, and its specific gravity is* ·736 *; the root and bark are used medicinally by the natives.*

Analysis.

Hu B Pyrie of Jaffna

1. A bud.
2 & 3. Pentamerous flowers, front and back view.
4. Anthers.
5. Ovary cut vertically.
6. A 4-merous flower.
7. Ovary cut horizontally.
8. A fruit.
9. The same cut vertically.
10. The same cut horizontally.

Govindoo, del. Dumphy, Lith.

Elæodendron Roxburghii (W.A.)

ZIZYPHUS JUJUBA. (Nat. order Rhamneæ.)

ZIZYPHUS. *Juss.*—GEN. CHAR. Calyx 5-lobed, spreading. Petals hood-shaped or rarely none. Stamens 5 included in the petals or scarcely exceeding them when present, disk flat, filling the short calyx-tube, ovary immersed in the disk, 2, rarely 3 or 4 celled, style shortly branched or styles distinct, stigmas small, drupe ovoid or globular, putamen woody or bony, 1 to 4 celled, 1 to 4 seeded, seeds with a smooth fragile testa, albumen none or scanty, cotyledons thick. Trees or shrubs, usually armed with stipular prickles, leaves alternate, 3 or 5 nerved, often distichous and very oblique, flowers small, greenish, in axillary cymes, fruit often edible.

ZIZYPHUS JUJUBA. (Lam.) Generally a middling sized tree with short stipulary solitary or twin prickles which are sometimes wanting, leaves ovate or nearly orbicular acute or obtuse entire or toothed 3-nerved glabrous or subglabrous above, covered beneath (as well as the petioles and branchlets) with a close white or rusty tomentum, 1-3 inches long. Cymes small compact and very short, ovary 2-celled tapering into a short 2-lobed style, drupe globular usually about $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter, 2 (or by abortion) 1-celled. *Lam. Enc. Meth.* 3 *p.* 318.

This is the well known Ber tree, very common, both wild and cultivated throughout this Presidency, and extending all over tropical Asia, Africa and Australia; it is called Ber in Hindostance, Renghà in Telugu, and Yellande in Tamil, and Hyee bin in Birmah; the wood is strong and much in use for many purposes, particularly for saddle-trees and sandals, and is adapted for cabinet and ornamental work, and makes good charcoal; it is close and even grained, hard and durable, when fresh cut of a yellowish-red color, turning to reddish-brown; a cubic foot unseasoned weighs 72-75 *lbs, and seasoned* 58 *lbs., and it has a specific gravity of* ·928. *The drawing is taken from a wild specimen; the extreme forms of the wild and cultivated tree differ considerably, but they run one into another and could not be separated even as varieties; the fruit of the cultivated tree is much larger than the wild, and is often eaten, being sweet and mealy, and some varieties are said to be delicious; the bark is employed by tanners, and a kind of kino is produced from it, which, together with the bark, root, seeds and leaves, is in use medicinally with the natives. The tree is most abundant in the plains, but in rare cases ascends to an elevation of about* 4000 *feet; cultivated trees have been known to reach a girth of about* 10 *feet; a lac used for dyeing is found in the rains on a variety in the Punjab.*

Govindoo, del:

Dumphy Lith:

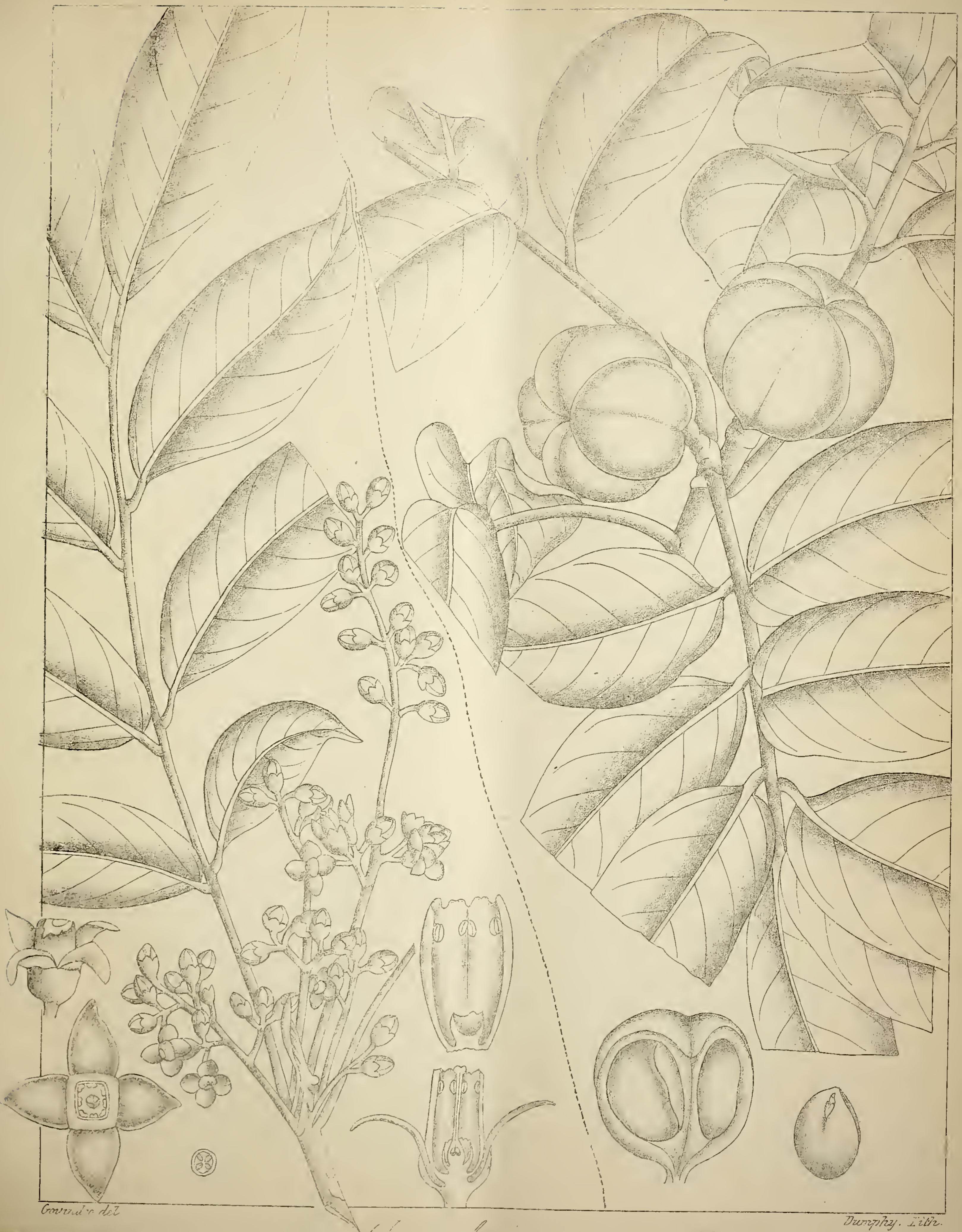
Zizyphus Jujuba, (Lam:)

DYSOXYLUM MACROCARUPM. (Nat. order Meliaceæ.)

This tree has been fully described in the Manual at page lvi.

The drawing has been received from Dr. Thwaites and is from a Ceylon specimen.

PL. CL.



Govindoo del.

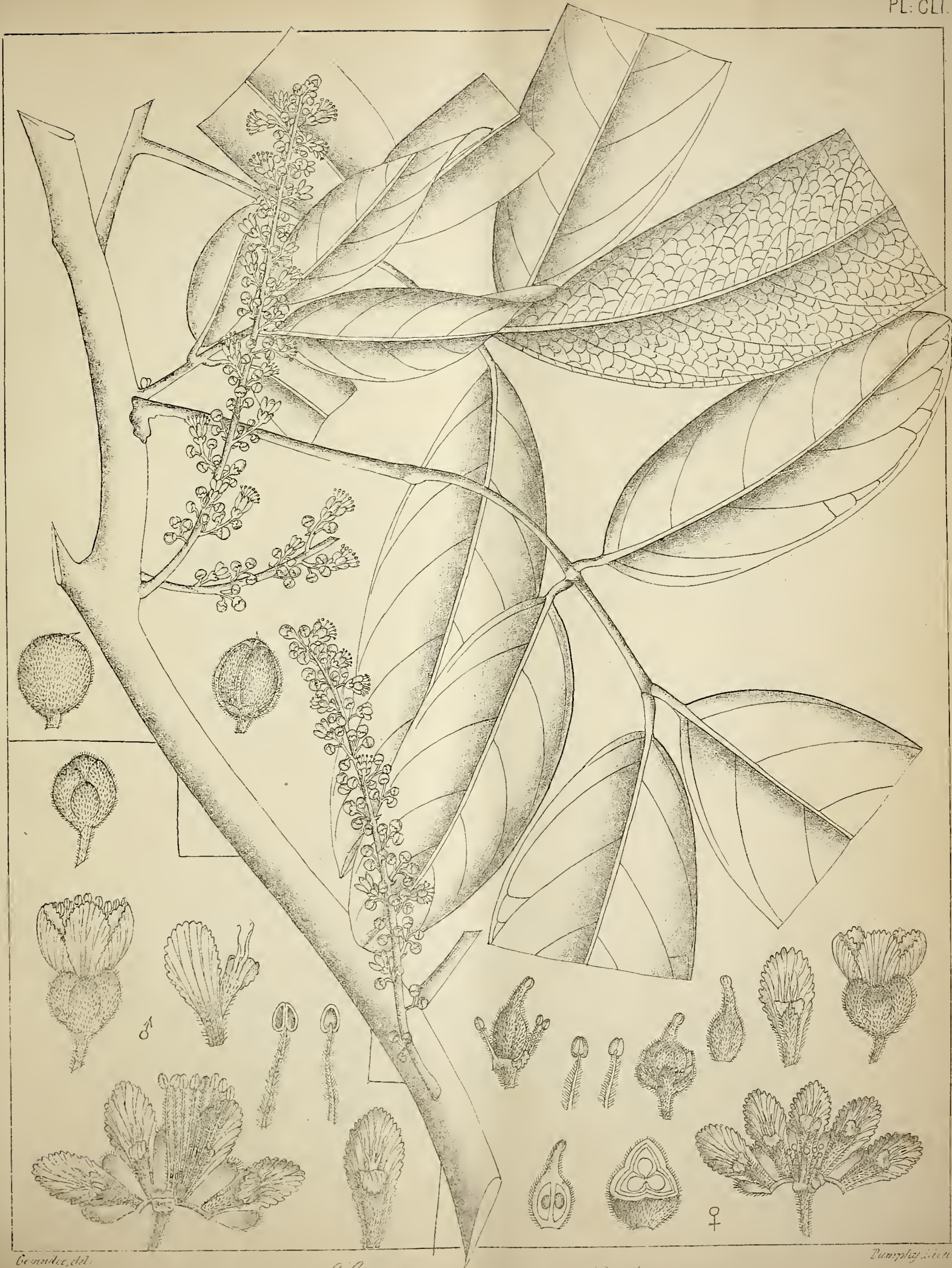
Dunphy. Lith.

HEMIGYROSA CANESCENS. (Nat. order Sapindaceæ.)

HEMIGYROSA. *Blume.*—GEN. CHAR. Flowers polygamo-monœcious irregular, sepals 5 unequal erect concave, 2 exterior smaller, broadly imbricate, petals 4-5, the fifth sometimes wanting or small each furnished with a scale above the long villous claw; disk unilateral, stamens 8 in the male, 6-8 in the hermathrodite unequal unilateral (at least in the male), filaments pilose, anthers scarcely exserted, ovary excentric 3-angled or sub-entire 3-celled, style short or elongate, stigma 3-angled or subentire obtuse, ovules solitary in the cells fixed to the axis about the middle, fruit indehiscent coriaceous fleshy or woody 3-angled or spherical, velvetty or tomentose 3-celled, cells hirsute within, seed oblong exarillate, testa coriaceous, cotyledons fleshy equal. Trees, leaves alternate exstipulate abruptly or unequally-pinnate, flowers in canescent racemes.

HEMIGYROSA CANESCENS. (Roxb.) A good sized tree, trunk of considerable girth but not straight, bark ash colored, slightly scabrous, branches numerous spreading, leaves alternate abruptly and unequally pinnate 6-10 inches long, leaflets occasionally only 1 pair or ternate, generally 2 pairs with or without a terminal odd one, the terminal pair opposite, the lower pair opposite, subopposite or alternate, lanceolate to oblong entire glabrous slightly coriaceous, 3-6 inches long by $1\frac{1}{2}$-$2\frac{1}{2}$ broad, petiolules 2-3 lines long slightly fuscous, racemes numerous axillary or scattered over the branchlets, simple or branched at the base, minutely tomentose, bracteoles minute triangular shorter than the pedicels, flowers small white fascicled, in the male the stamens are always 8 and all unilateral and the petals only 4, the adnate scales being larger than in the fertile flowers, in the fertile flower the disk is unilateral, the stamens 6-8 arranged irregularly all round the ovary, petals 5 all equal in size and each furnished with a bifid scale, or the 5th scaleless, or entirely absent or small, fruit subspherical or 3-angled tomentose often 1-seeded by abortion.—Molinæa canescens, *Roxb. Fl. Ind.* ii. 243. Cupania canescens, *W.A. Prod. p.* 113. Sapindus tetraphyllus, *DC. Prod.* 1. 608.

A common tree in jungles on the eastern side of the Madras Presidency, Salem, Cuddapah, Mysore, &c., also found in Bombay and Ceylon; it does not ascend the mountains much above 3000 *feet; the wood is whitish and is occasionally used by the natives for building purposes; it is called Korivi in Teligoo, Nekotà in Tamil, and Kurpa in the Bombay Presidency; in most of the fertile flowers (from fresh specimens) that I dissected, I found* 5 *equal petals, one of the* 5 *often being scaleless, and the stamens as often* 6 *as* 8, *I could not find more than* 4 *petals in any of the male flowers; the flowers are probably subject to great variation (as is often the case with polygamous flowers), some being intermediate between the male and hermathrodite, &c, and an analysis from other individuals might show considerable difference. (Vide remarks in the Manual under Hemigyrosa trichocarpa.)*



Gonsalves, del: Dumphy lith

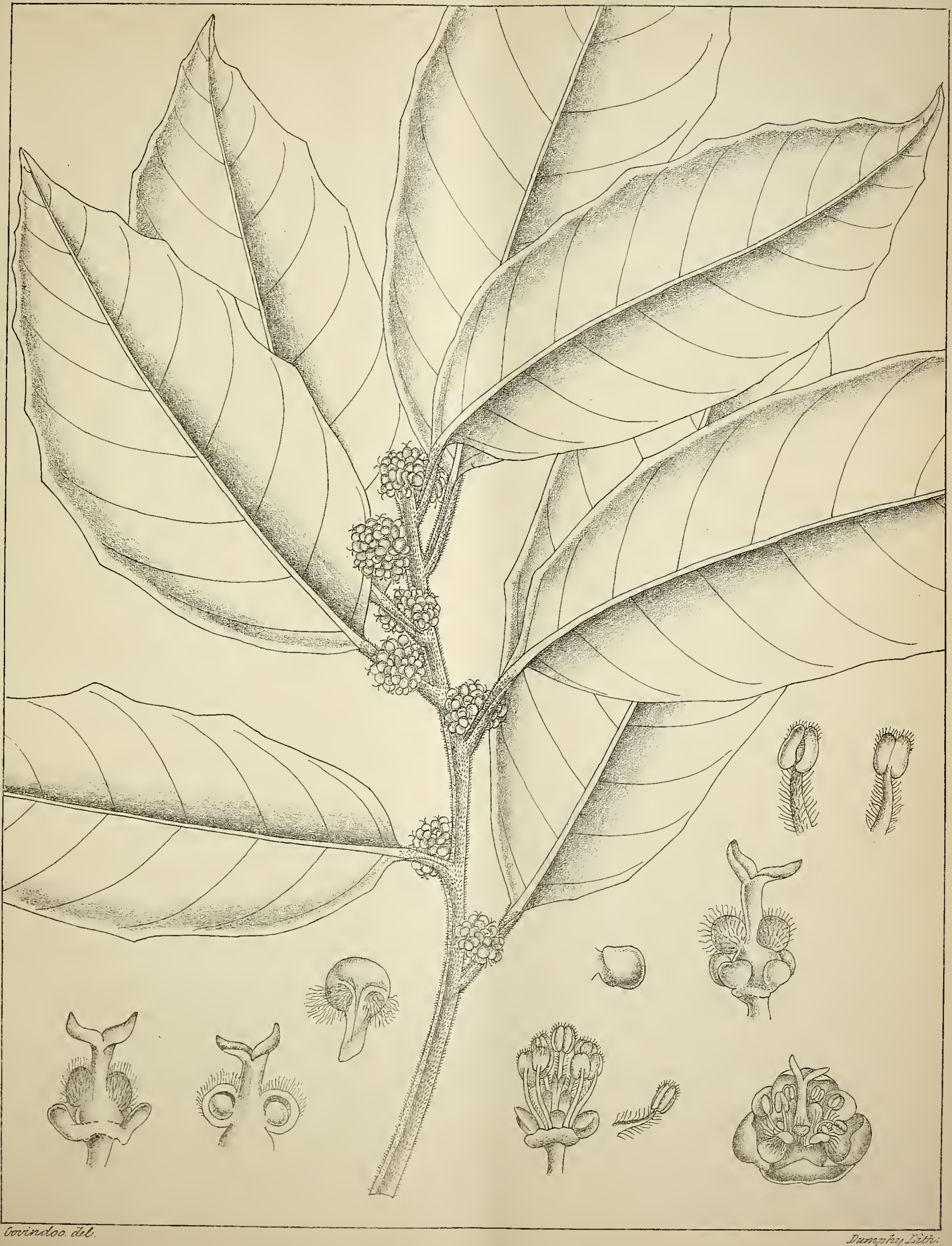
Aporosa canescens, Roxb.

SCHMIDELIA HISPIDA. (Nat. order Sapindaceæ.)

SCHMIDELIA. *Linn.*—GEN. CHAR. Flowers polygamo-diæcious, sepals 4 in two opposite pairs membranous, cucullate, broadly imbricated, the two outer ones smaller than the others, petals 4, small or absent, glabrous or villose internally. Disk unilateral, entire or lobed or with a gland opposite each petal, stamens excentric or subcentric, included or shortly exserted, ovary excentric, single and 1-celled or didymous and 2-celled, rarely 3-lobed and 3-celled, style robust, divided sometimes to the base into 2 or 3 lobes, ovules solitary in the cells, ascending from the base, cocci of the fruit one or two, turbinate or subglobose, dry and coriaceous or fleshy, seeds erect, with a short fleshy arillus, embryo curved, the cotyledons conduplicate. Trees or shrubs.—Ornitrophe, *Juss.* Allophyllus, *Linn.* Aporetica, *Forst.*

SCHMIDELIA HISPIDA. (Thw.) A small tree branches hispid, leaves simple 5-14 inches long by 2-5 inches broad, lanceolate acuminate rounded at the base or slightly narrowed, glabrous but hispid at the margin and on the costa and primary veins on both sides, petiole $\frac{3}{4}$-2 inches long, racemes very short, flowers crowded, petals unguiculate, scales furnished with long villous hairs. *Thw. En. Pl. Zey. p. 55.*

A small tree, moist forests in Ceylon, at an elevation of 1000-2000 *feet. The drawing and analysis are from Dr. Thwaites.*



Govindoo. del.

Dumphy Lith:

Schmidelia hispida (Thw.)

GLENNIEA ZEYLANICA. (Nat. order Sapindaceæ.)

GLENNIEA. *Hook. fil.*—GEN. CHAR. Flowers regular polygamous, calyx 5-lobed, lobes acute valvate, petals very minute broader than long shortly unguiculate concave villous, disk complete expanded fleshy glabrous lobed, stamens 8-10 inserted regularly round the ovary, filaments short subulate, anthers short didymous, ovary ovoid, puberulous 3 celled, attenuated into a very short conical style, stigmas 3 shortly 2-lobed, ovules solitary in the cells, fruit obscurely lobed, 3-celled 3 seeded (or by abortion 1-2-celled 1-2-seeded), seed subglobose, aril 0. A large tree, leaves alternate, pinnate, leaflets 1-2 pair, racemes simple or branched, leaf opposed, flowers small pubescent.

GLENNIEA ZEYLANICA. (Hook. fil.) A large tree, leaves (turning black in drying) alternate pinnate, petioles terete tumid at the base, leaflets 1-2 pair with or without a terminal odd one, glabrous lanceolate reticulate obtusely acuminate, 3·5 inches long by $1\frac{1}{4}$-2 inches broad, petiolules tumid 2-3 lines long, racemes simple or branched subterminal, leaf-opposed, minutely pilose, fruit $\frac{3}{4}$-$1\frac{1}{2}$ inches in diameter, subglobose and obscurely lobed. *Hook. fil. Gen. Pl.* 1 *p.* 404. Sapindus unijugus, *Thw. En. Pl. Zey. p.* 56, and Nephelium fuscatum, *p.* 57. Glenniea, *p.* 408.

A large tree, Ceylon, Trincomalee, and on the mountains up to 4000 feet elevation ; the drawing of the branch is from Dr. Thwaites ; the analysis is taken from dried flowers.

Govindoo, del: Dumphy, Lith:

Glenniea Ceylanica. (Hook fil.)

SAPINDUS EMARGINATUS. (Nat. order Sapindaceæ.)

SAPINDUS. *Linn.*—GEN. CHAR. Flowers polygamous, regular, sepals 4-5, biseriate, broadly imbricated, petals 4-5, scaleless or furnished with 1 or 2 scales above the claw, disk complete, annular, stamens usually 8-10, centrical, the filaments usually pilose, anthers versatile, ovary entire or 2-4 lobed 2-4 celled, style terminal, stigma 2-4 lobed, ovules solitary in the cells, ascending from the interior angle at the base, fruit fleshy or coriaceous, usually with 1-2 cocci, which are oblong or globose, and indehiscent. Seeds usually globose, exarillate, with a crustaceous or membranous testa. Embryo straight or curved, the cotyledons thick, the radicle incurved. Trees.—Aphania, *Blume.* Dydimococcus, *Blume.*

SAPINDUS EMARGINATUS. (Vahl.) A middling sized tree with a short trunk and a very large dense spreading head and a deep green foliage, leaves alternate abruptly pinnate 6-8 inches long, petiole terete pubescent on the upper side, leaflets 2-3 opposite or subopposite pair, oblong entire with a rounded emarginate apex, prominently reticulated particularly beneath, shining above and glabrous on both sides or downy beneath, 4-5 inches long by 1½-2 broad, petiolules 2-3 lines long slightly pubescent, panicles terminal much branched, flowers small whitish inodorous, bractes small caducous, sepals and petals 5 the latter hairy on the outside and furnished with 2 inflected woolly scales about the middle, or the scales are absent and the hairs only present, filaments 8, alternately a little shorter in the male flowers, fruit with 3 rarely 4 cocci, smooth at first but wrinkled in age, seeds dark colored size of a large pea and very hard. *Roxb. Fl. Ind.* ii. 279;—*Vahl. Symb.* 3. 54;—*Wight Ill. t.* 51.

The specimen figured is from the Anamallay forests, and having only male flowers, I have taken the drawing of the fertile flower and fruit from Dr. Wight's plate in his *Illustrations.*

A handsome tree common in many forests in the plains and subalpine regions of this Presidency and in Mysore, Bombay, Bengal Birmah and Ceylon, it is called Retha in Hindustani, Konkudu in Teligoo, Puvandi and Ponnanga in Tamil, Puvella in Singhalese and Haik-khyae in Birmese; the berries are saponaceous and are used with the other species as soap by the natives, and all the species are called soap nut trees by Europeans; the root, bark and fruit are used medicinally by the natives and are said to have virtue in epilepsy, and an oil is extracted from the nut; the wood is occasionally used by the natives for ordinary purposes, such as posts, door frames, and the construction of carts; it is pale yellowish, close and prettily grained, hard, but not durable, and cracks if exposed, and is said not to work easily; unseasoned it weighs 75 to 80 lbs. the cubic foot, and 64 lbs. when seasoned; its specific gravity is ·928. Sapindus detergens, Roxb, a Bengal tree, is probably not specifically distinct from this species.

Govindoo, del.

Sapindus emarginatus (Vahl.)

Dunphy Lith:

NEPHELIUM STIPULACEUM. (Nat. order Sapindaceæ.)

Nephelium, *Linn.*—For Gen. Char. see Manual.

NEPHELIUM STIPULACEUM (Bedd.) A middling sized tree, leaves glabrous abruptly pinnate, 6-14 inches long, leaflets 2-3 pair, the lowest pair opposite, quite at the base of the common petiole, very small obliquely curved and stipuliform, the others alternate opposite or subopposite oblong obtusely or rather sharply pointed slightly attenuated and oblique at the base, glabrous on both sides, pale or glaucous beneath and there furnished with small round pit-like glands in the axils of the primary veins, 3-6 inches long by 2-3 broad, panicles axillary and terminal slightly pilose, a little shorter than the leaves, flowers polygamo-diœcious apetalous, calyx 5-6 partite in a single series, lobes distinct or nearly distinct subvalvate, stamens 5-9, only slightly exserted, ovary 2-3 lobed 2-3 celled, style 2-3 parted, lobes recurved, fruit oval (only 1 carpel coming to maturity) the size of a large gooseberry densely covered with weak prickles, seed oblong half covered with the succulent aril, testa brown, cotyledons very large fleshy. *Bedd. in Linn. Trans. vol.* xxv. *and Icones Pl. Ind. Orient. Part VI. tab* ciii. *page* 21.

A handsome tree, rather rare in the moist forests in Malabar and on the Anamallays; the wood is strong and serviceable.

Analysis.

1. A small portion of the leaf, underneath view to show the glandular pits in the axis of the primary veins.

2, 3, 4. & 5. Magnified views of the apetalous flower, showing 5, 6, and 9 stamens and 2 lobed ovaries.

6. A flower with a 3-lobed ovary.
7. Ovary cut vertically.
8. The same cut horizontally.
9. The fruit, natural size.
10. Magnified view of the muricated rind of the fruit.
11. Fruit opened.

Govindoo. del. Dumphy, Lith.

Nephelium stipulaceum (Bedd.)

EUPHORIA LONGANA. (Nat. order Sapindaceæ.)

EUPHORIA. *Juss.*—GEN. CHAR. Flowers regular, polygamous, sepals 5, distinct, imbricate or valvate in the bud, petals none or as many as sepals, with or without a scale inside, disk annular, stamens 6 to 10, inserted within the disk, ovary 2 or 3-celled, usually lobed, with 1 ovule in each cell, style deeply 2 or 3-lobed, or divided to the base into distinct styles, fruit deeply 2 or 3-lobed, or reduced to a single carpel, the lobes usually indehiscent, often tuberculate, seeds enclosed in a pulpy arillus ; testa coriaceous, cotyledons thick. Trees, with the young shoots usually pubescent, leaves pinnate, leaflets as in *Nephelium,* but in 1 species toothed ; flowers small in terminal panicles.—See Manual under the genus Nephelium.

EUPHORIA LONGANA. (Roxb.) A rather large tree with a short straight trunk and a dense globular head polygamo-monæcious, leaves alternate abruptly pinnate 6-10 inches long, leaflets 2-4 pair glabrous above, more or less hoary and glaucous beneath, (as are the young shoots and panicles) coriaceous entire, from ovate-lanceolate to oblongo-lanceolate, often very oblique at the base obtuse or acute at the apex and sometimes mucronate, $2\frac{1}{2}$-9 inches long by $\frac{3}{4}$-$2\frac{1}{4}$ broad, veins pinnate prominent, petiolules 2-5 lines long, panicles terminal and from the upper axils, flowers small pale yellowish-white, male and hermathrodite mixed in the same panicle, calyx deeply 5-parted hoary or downy on both sides, petals 5 inserted between the calyx-lobes and the disk, scaleless, narrow linear-lanceolate, hairy, much longer in the male than in the hermathrodite, stamens hairy generally 10 in the male and 8 in the hermathrodite (sometimes only 8 and 6), in the former longer than the petals, in the latter with very short filaments, ovary hairy 2-3 lobed, stigmas the same number, fruit of 1-3 (generally only 1) cocci about the size of a cherry, from nearly smooth or more or less hoary or scabrous to grossly tuberculate and warted, aril edible.—Scytale longana, *Roxb. Fl. Ind.* ii. *p.* 270. Euphoria longana, *Lam. DC. Prod.* 1 *p.* 611. Dimocarpus longana, *Lour,* Nephelium longanum, *Comb,*

A handsome tree, common in all the jungles (vp to 3,000 *feet) on the west side of the Madras Presidency, in Mysore Bombay, Eastern Bengal, Ceylon and in China ; the description is drawn up from copious specimens collected in South Canara, the Anamallays, the Sivagherry hills, Courtallvm and Ceylon ; in S. Canara the tree is called Mal àhcotà, at Courtallum Poonà, in the Bombay Presidency Wumb, in Ceylon Mora ; the Chinese name is Longan (hence Roxburgh's specific name, he having first received the tree from China) ; the wood is said to be hard, close grained and white and worth attention, but I have not seen it in use ; the succulent aril of the seed is an agreeable acid and something like the Litchi. As a genus it should not I think be kept distinct from Nephelium. The drawing is from a specimen gathered on the Tinnevelly mountains at* 2500 *feet elevation, and the leaves are more acuminated than in most of the forms. Analysis is given of male and hermathrodite flowers, the former with* 10 *stamens, the latter with* 8 *only.*

Analysis,

1. A male flower showing 10 stamens, petals and stamens, much larger than the calyx.
2. A petal.
3. Abortive ovary.
4. Anthers.
5. Female flower, stamens removed, showing the ovary, disk and short petals.
6. The same, showing the short stamens, 8 in number.
7. Anthers.
8. A 3-lobed ovary.
9. A 2-lobed ovary.
10. Ovary cut vertically.
11. A 3-celled ovary cut horizontally.
12. A 2-celled ovary cut horizontally.

Govindoo del.

Dumphy, Lith.

Euphoria Longana (Roxb.)

POMETIA EXIMIA. (Nat. order Sapindaceæ.)

POMETIA, *Forst.*—GEN. CHAR. Flowers regular polygamo-diæcious, calyx small cupular 4-5 fid, teeth erect valvate, petals 4-5 without scales, disk complete, stamens 4-8 centrical very long and exserted, anthers small, ovary deeply 2-3 lobed, 2-3 celled, style short or elongate, stigma small, ovules solitary in the cells ascending from the base of the axis, fruit of 1-2 globose or ovoid indehiscent cocci, seed nearly covered with an aril, embryo conduplicate; lofty trees glabrous or tomentose, leaves alternate pinnate, leaflets subsessile serrate, the lowest pair small and stipuliform, racemes simple or paniculate slender elongate, flowers small. *Forst. Prod.* v. 74 (partly). Irina, *Blume Bijdr.* 230. Eccremanthus, *Thw. in Hook. Kew. Journ.* vii. 272 *t.* 9.

See Manual under the Genus Nephelium.

POMETIA EXIMIA. (Thw.) A large tree 40-60 feet, young branches rufo-hirsute, leaves large abruptly pinnate subsessile, leaflets 5-13 pair oblongo-lanceolate serrate subsessile, hirsute beneath, the lowest pair very small and stipule-like, oblique, curved and often deciduous, panicles tomentose, branches elongate pendulous many flowered cylindrical, flowers minute 5-merous, calyx-segments short subacute, petals small not clawed, transversely oblong not furnished with scales but with a transverse hairy line near the apex on the inside, disk fleshy reddish, stamens 5 inserted on to the centre of the disk, in the male flowers very long and exserted, short and only slightly exserted in the hermathrodite flowers, ovary 2 lobed hirsute, style linear, stigma minute 2 lobed, fruit fleshy subglabrous, generally 1 lobed, seed oblong nearly covered with the aril, hilum large oblique, testa red. *Thw. En. Pl. Zey.* p. 57, and *in Hook. Journ. of Bot.* vii. p. 272. *t.* 9.

This tree has only been found in Ceylon (elevation 1000-2000 feet); it flowers in May and fruits in July.

Analysis.

1, 2. Male flower, front and back view (much magnified.)
3. A petal showing the line of hairs near its apex on the inner face.
4. Anther, back view.
5. Anther, front view.
6. Hermathrodite flower.
7. The same petals and stamens removed to show the ovary.
8. Ovary cut vertically.
9, 10, 11, 12. Fruit, seed, &c. (Figures 9 to 12 from a drawing by Dr. Thwaites).

Govindoo, del. Dumphy lith.

Pometia eximia (Thw.)

HARPULLIA IMBRICATA. (Nat. order Sapindaceæ.)

HARPULLIA, *Roxb.*—GEN. CHAR. Flowers regular, polygamous. Sepals 4 or 5. Petals as many, without any scale, but sometimes with inflected auricles at the base of the lamina. Disk inconspicuous. Stamens 5 to 8. Ovary 2-celled, with 1-2 ovules in each cell ; style short, or elongated and spirally twisted. Capsule coriaceous, somewhat compressed, with 2 turgid lobes opening loculicidally in 2 valves. Seeds 1 or 2 in each cell, with or without an arillus ; cotyledons thick. Trees, leaves pinnate ; leaflets usually large, the primary veins prominent underneath. Flowers in loose terminal little-branched panicles, sometimes reduced to simple racemes. Capsule usually large, red or orange-colored.—Streptostigma, *Thw.* Otonychium, *Blume,* ? Blancoa, *Blume.* Tina, *Blume.* Danatophorus, *Zippel.*

Harpullia cupanioides, *Roxb. Fl. Ind.* ii. *p.* 645, is a nearly allied species found in North India ; it differs chiefly in the ovary being only 1-celled, in its large entire aril, and bifid stigma ; it is called Harpulli in Chittagong.

HARPULLIA IMBRICATA. (Blume.) A large tree, much branched, young parts petioles and panicles slightly velvetty pubescent, leaves alternate abruptly pinnate 10-16 inch long, leaflets 3-5 pair generally alternate sometimes opposite or sub-opposite membranaceous, penniveined (primary veins inconspicuous above, prominent beneath) entire ovate from generally an oblique base, to oblongo ovate acute or acuminate, generally glabrous on both sides except the costa beneath, but sometimes the costa above and primary veins beneath are pubescent, 2-7 inches long by 1-2¼ broad, petiolules 2-3 lines long, panicles lax, flowers green, in the hermathrodite ovary hairy, cells 2-ovuled, stigma generally twisted, sometimes entire or sub-entire, stamens included ; in the male, stamens much exserted. Capsule glabrous 2-2⅓ inches broad ½ or less than ½ that in length, bright orange in color, 2 lobed depressed between the lobes and apiculate with the remains of the style, lobes much inflated generally 2 (sometimes 1) seeded, seed black furnished with a small aril, seldom more than 1 in each capsule coming to maturity.—Otonychium imbricatum, *Bl. Rumphia.* iii. 180. Streptostigma viridiflorum, *Thw. in Hook. Journ. of Bot. vol.* vi. *p.* 298. *t.* 9*A*.

This very beautiful tree is common in the western moist forests of this Presidency from Canara down to Cape Comorin, and it ascends the mountains to about 3500 *feet elevation* ; *when covered with its brilliant orange fruit it is a beautiful sight on the ghats in Malabar and Canara ; it is also found in Ceylon. I have never seen the stigma so much twisted in the Indian plant as it is in the Ceylon one (fig. A is a drawing of a flower by Dr. Thwaites from a Ceylon specimen), and it is sometimes not at all twisted ; the tree flowers in the cold season and ripens its fruit in March and April. I know nothing of the timber.*

Analysis.

1. A male flower showing the exserted stamens.
2. Hermathrodite flower.
3. Same, petals removed and calyx opened out to show disk, stamens, ovary and twisted style.
4. Hermathrodite flower, petals removed, showing a style not twisted.
5. A petal.
6. Anthers, front and back view.
7. Ovary cut vertically, showing the 2 superposed ovules in each cell.
8. The same cut horizontally.
9. A fruit.
10. One of the valves of the capsule showing 2 seeds with their small arils (the other 2 seeds adhering to the other valve.) The three lower leaflets on the left side of the branch represent the upper surface, the other leaflets with more prominent primary veins the lower surface ; the flowering branch is from a hermathrodite tree.

Govindoo, del:

Dumphy, Lith:

Harpullia imbricata (Blume)

TURPINIA NEPALENSIS. (Nat. order Sapindaceæ.)

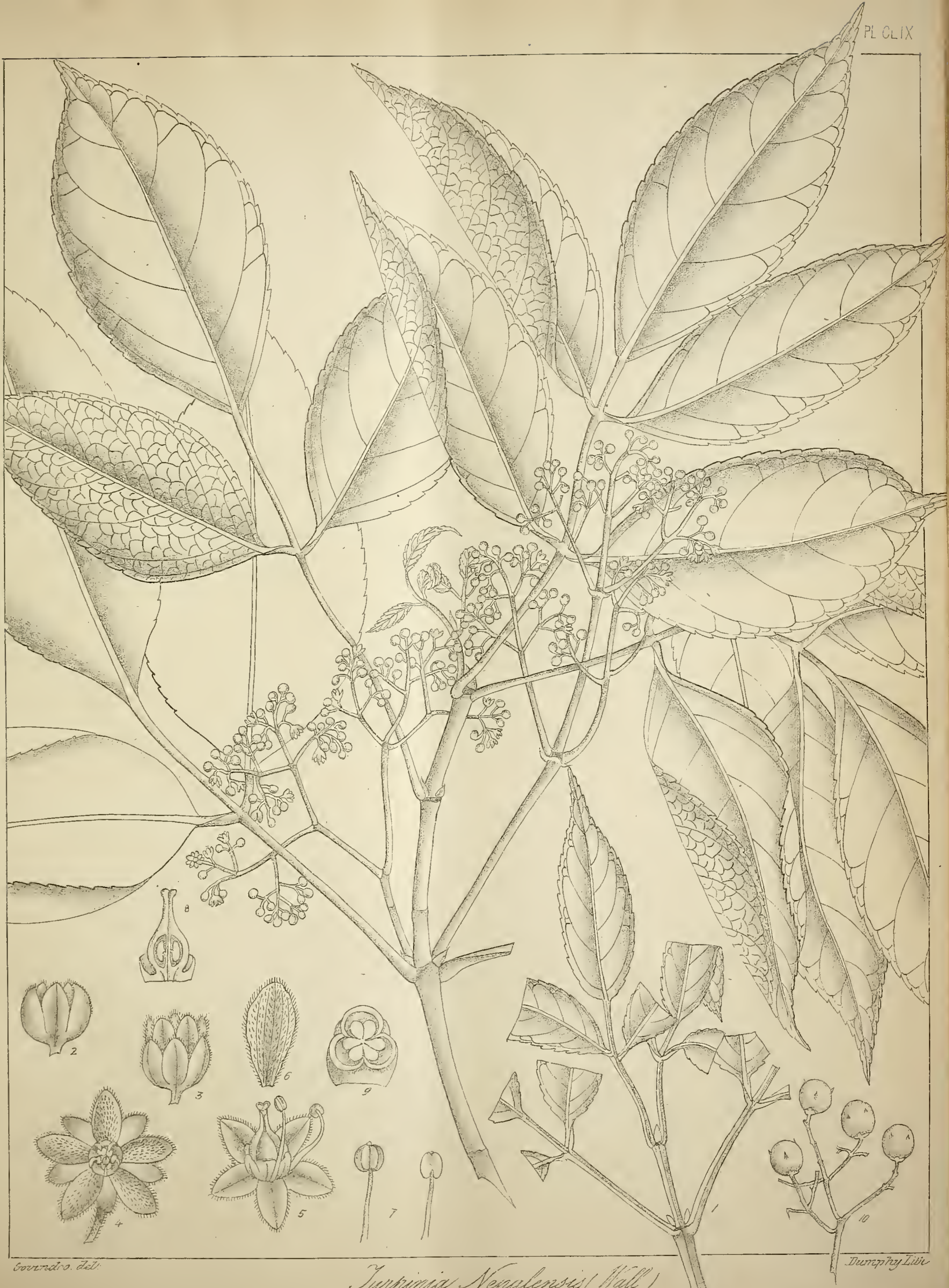
TURPINIA. *Vent.*—GEN. CHAR. Flowers regular hermathrodite, calyx 5-fid imbricate persisteut, petals 5 sessile imbricate, disk raised crenate or lobed, stamens 5 inserted under margin of the disk and between its lobes, ovary sessile 3-lobed 3-celled, styles 3 combined or free, stigmas sub-capitate, ovules 2 in each cell or many in 2 series ascending anatropal. Fruit subglobose fleshy or coriaceous crowned with the scars of the styles, 3 celled or fewer by abortion, seed peudulous or fixed horizontally to the axis angled compressed, testa crustaceous or bony, hilum large, albumen fleshy, embryo straight, cotyledons plano-convex. Trees or shrubs glabrous, leaves opposite unequally-pinnate (or very rarely simple), stipules interpetiolar early deciduous, leaflets opposite serrate, flowers small in axillary or terminal panicles.—Dalrymplea, *Roxb.* Lapecedea, *H.B.K.* Ochrautha, *Lindl.* Eyrea, *Champ.* Triceraria, *Willd.*

TURPINIA NEPALENSIS. (Wall.) A good sized spreading evergreen tree, young parts generally very minutely puberulous (under the lens), leaves trifoliate or unequally pinnate 4-7 inches long furnished with interpetiolar stipules which are early deciduous, leaflets 1-2 opposite pair with an odd one, ovate to elliptic, acuminate rather coriaceous toothed or rarely entire quite glabrous on both sides 2-3 inches long $\frac{3}{4}$ to $1\frac{1}{2}$ broad, petiolules 2-3 lines long, stipels small acute, panicles in the axils of the upper leaves, from shorter to a little longer than the leaves trichotomous, minutely bracteoled, flowers numerous small greenish yellow, calyx very minutely ciliate and slightly puberulous on both sides, tinted with red on the outside, petals ciliate and hairy on the inside glabrous or very minutely puberulous outside, glands of the disk yellow, filaments glabrous, ovary 3 lobed with 3 styles, lobes and styles combined but easily separable when young, ovules 2-3 in each cell, fruit globular or subglobular, the 3 lobes of the ovary quite consolidated into one, more or less 3-pointed with the remains of the styles, very variable in size, generally not larger than a pea, sometimes up to 1 inch in diameter. *Wall. L. n.* 4277 ;—*Wight Icones* 972.

A common tree on the mountains all over India and Ceylon, also found in Hongkong ; it is occasionally found in very low elevations not much above sea level ; it is particularly common about Ootacamund at 7000 *feet ; it is called Neelà by the Burghers on the Nilgiris, and Kankoombala and Allakirilla in Ceylon.*

Analysis.

1. Apex of a very youug branch showing one of the interpetiolar stipules, the scar of another, and the minute stipels.
2. A young bud.
3. A flower.
4. The same open, showing the ciliate calyx and hairy petals.
5. A flower, petals and 3 stamens removed, showing the lobed disk, insertion of the stamens, and the 3 ovaries (closely attached.)
6. A petal.
7. Anthers, front and back view.
8. Vertical section of the ovary showing the insertion of the ovules.
9. Transvere section showing the cells 2 ovuled.
10. A small portion of a fruit-branch.



Govindro. del.   Dumphy Lith

Turpinia Nepalensis (Wall)

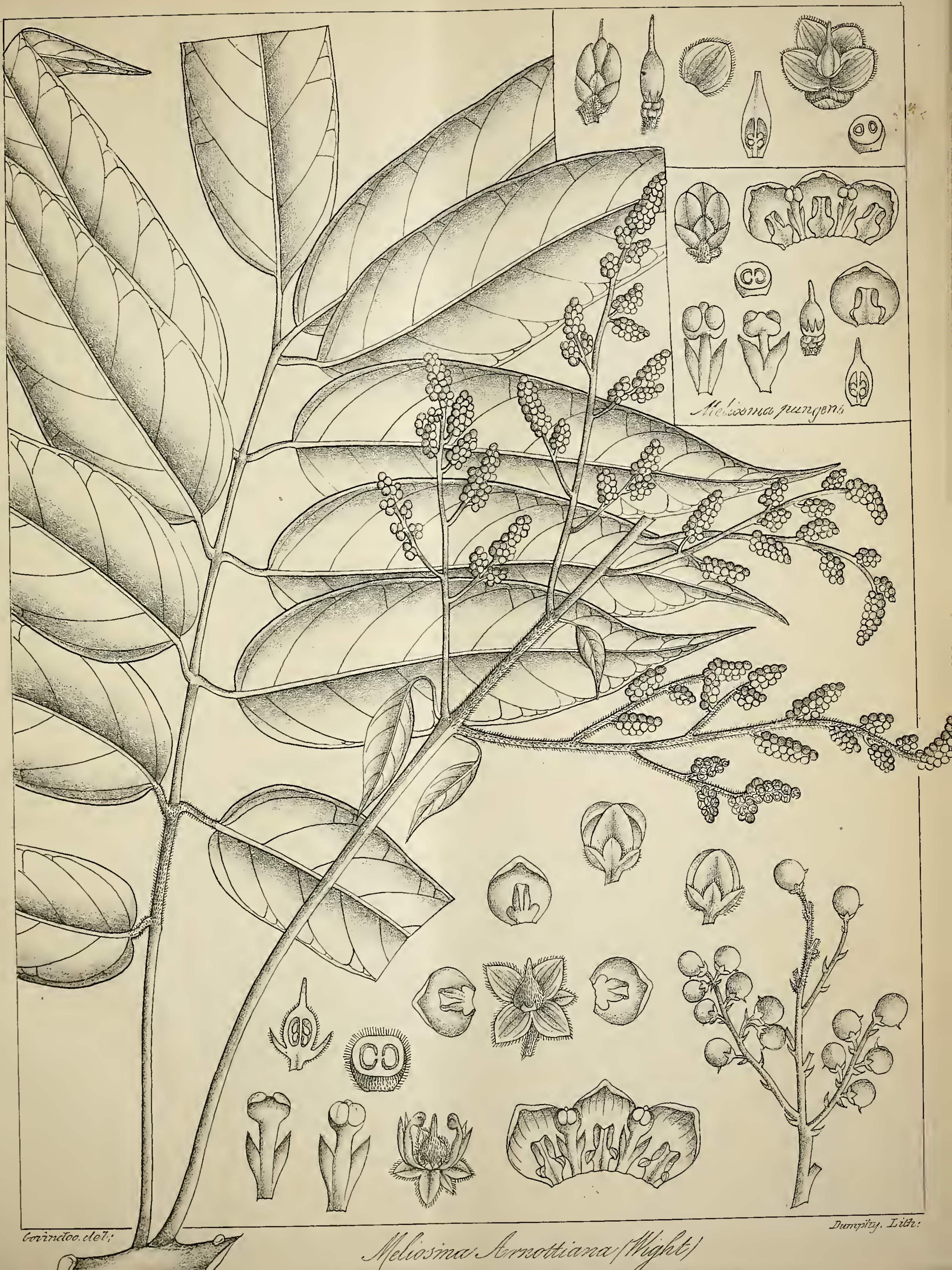
MELIOSMA ARNOTTIANA. (Nat. ord. Sabiaceæ.)

MELIOSMA, *Blume.*—GEN. CHAR. Flowers hermaphrodite or polygamo-diæcious, sepals 4-5 unequal or sub-equal imbricate, petals 4-5 opposite the sepals, very unequal, 3 exterior orbicular concave, 2 interior small flat sometimes bifid, disk cupular 3-8 toothed, teeth sometimes bifid, stamens 5 inserted outside the base of the disk opposite the petals, very unequal free or cohering with the base of the petals, the 2 larger perfect, the 3 sterile opposite the large petals, filaments flat, anthers large globose didymous, cells dehiscing by a large opening, connective much dilated saucer-shaped, ovary sessile 2-3 celled, style simple sulcate short and thick, stigma simple or 2-3 fid, ovules 2 in each cell superposed horizontal or pendulous, micropyle inferior, drupe obliquely subglobose, endocarp bony or crustaceous 1-celled 1-seeded (rarely 2-celled), seed with a small cavity on one side near the base, testa membranaceous, cotyledons conduplicate, radicle incurved. Trees or shrubs generally pilose or pubescent, leaves alternate simple or pinnate, leaflets entire or serrate, racemes compound thyrsiform many flowered generally bracteated, fruit small pea like.—Millingtonia, *Roxb. Fl. Ind.* 1. 102. Oligostemon, *Turcz.* Lorenzeana, *Liebm.* Kingsboroughia, *Liebm.*

A genus of very curious structure, Roxburgh and some other botanists have described it as with 2 *stamens and* 3 *petals, the bifid petals and sterile stamens being considered nectaries. Besides the* 3 *species described in this flora, which are all most abundant in this Presidency,* 2 *inhabit Bengal, M. pinnata, Roxb.; and dilleniifolia, Wall.*

MELIOSMA ARNOTTIANA. (Wight.) A large tree with a very spreading head, leaves unequally pinnate 8-16 inches long, leaflets 5-7 opposite or sub-opposite pair, ovate-oblong with a long acumination, coriaceous quite entire glabrous above or the costa pubescent, densely pubescent or glabrous except the costa beneath, $2\frac{1}{2}$-$5\frac{1}{2}$ inches long by $\frac{3}{4}$-$\frac{1}{2}$ broad, petiolules 3-6 lines long, panicles axillary large covered with much rusty pubescence, often furnished with large leaf-like bractes below the lower or 2 lower ramifications, flowers very small and as in the generic character, calyx-segments more or less unequal generally 4 equal or sub-equal and the 5th very much smaller, style persistent and spinuliform nearly at the base of the fruit.—Millingtonia Arnottiana, *Wight Ill. p.* 144 *and tab.* 53. Sapindus ? microcarpus, *WA. Prod. p.* 112.

A very common tree in Southern India and Ceylon at 4000 *feet and upwards; it is very abundant at Conoor on the Nilgiris, and is a most beautiful sight in June when in full blossom, its whitish panicles forming a perfect sheet of flowers over the top of the tree; it is also a very conspicuous tree when in flower in the mountain sholas on the Annamallays. It is called by the Burghers on the Nilgiris Huli makay (tiger-like), the heart-wood of very old trees being striped reddish and white; the timber is worthless, being spongy and light, but is occasionally used for rafters and as firewood.*



Govindoo. del.; Dumphy. Lith:

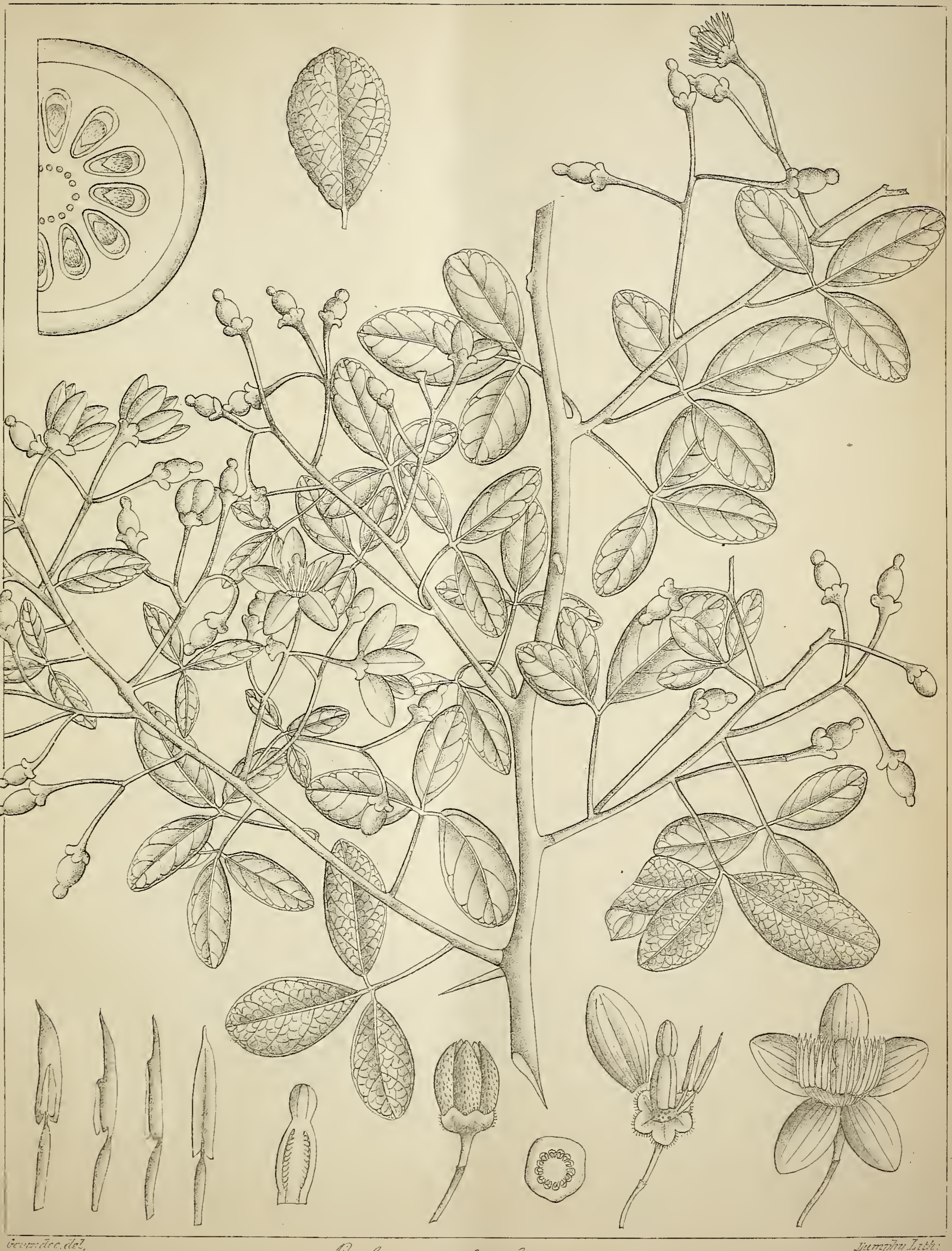
Meliosma Arnottiana (Wight)

ÆGLE MARMELOS. (Nat. ord. Rutaceæ.)

ÆGLE, *Correa.*—GEN. CHAR. Flowers hermathrodite, calyx small 4-5 toothed deciduous, petals 4-5 oblongo-lanceolate patent imbricate. Stamens numerous, filaments short subulate, anthers elongate erect, disk inconspicuous, ovary ovoid 8-15 celled attenuated into a short style, stigma oblong deciduous, ovules many in each cell in 2 rows, berry globose, rind woody, 8-15 celled, cells many seeded replete with mucous juice, seed oblong compressed, testa woolly and covered with slime. Trees, spinose, leaves 3-foliate, leaflets slightly crenulate, pellucidly punctate, panicles axillary few-flowered, flowers rather large white, fruit large, pulp edible.

ÆGLE MARMELOS. (Corr.) A good sized tree, trunk pretty erect, bark ash-colored, branches few and irregular, spines axillary single or in pairs, or wanting, very sharp and strong, leaves trifoliate (rarely pinnate with 5 leaflets ?), leaflets glabrous or pubescent oblong or broad lanceolate attenuated to a blunt point, inconspicuously crenulate, the exterior one always the largest, panicle small terminal and axillary, flowers, &c. as in the generic character, fruit about the size of a cricket ball round and very hard. *Roxb. Fl. Ind.* ii. *p.* 579.

This is the well known Bel tree, it is common in a cultivated state throughout India, and is met with wild in many of our subalpine forests, but the wild variety has a far inferior fruit (one variety on the Denkinacottah hills, Salem, has densely pubescent foliage); it is called Bel in Hindustani, Vilva in Tamil, and Maredu in Teligu; it ascends the mountains to about 4000 *feet. The wood is light colored and variegated, compact and hard, but it is seldom cut for timber. In the Godavery forests the native drum is often made from it, and in some parts it is used for the naves of wheels and sugar crushers; the juice of the fruit makes a delicious sherbat, and is much drunk in Bengal as a hot weather beverage, it has aperient and detersive properties, and is considered a most useful drink in diarrhœa and dysentery, as it also acts as an astringent; the bark and root also are in use medicinally with the natives.*



Govindoo del. Dumphy Lith:

Aegle marmelos (Corr.)

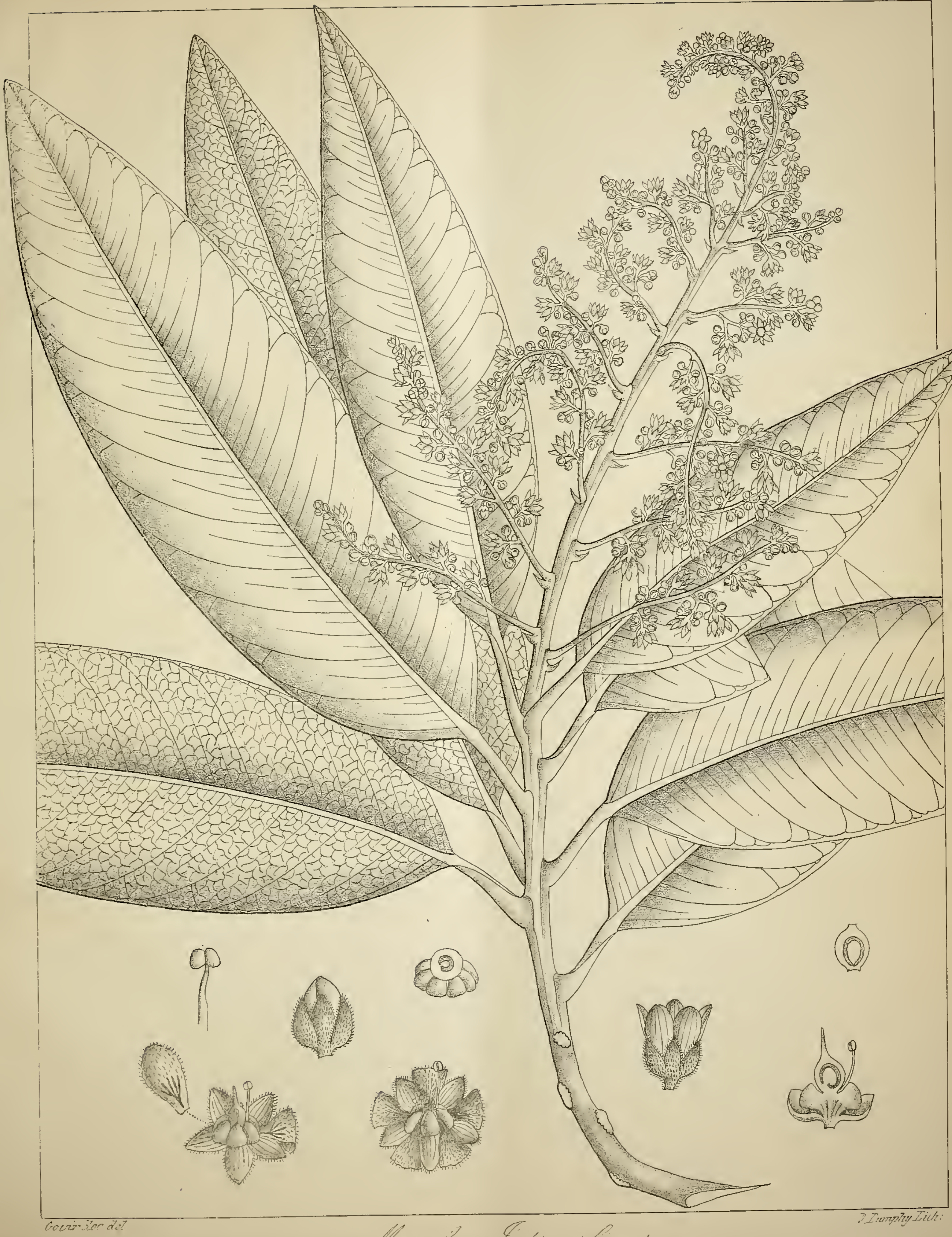
MANGIFERA INDICA. (Nat. ord. Anacardiaceæ.)

MANGIFERA, *Linn.*—GEN. CHAR. Flowers polygamous or diœcious, calyx 4-5 partite imbricate deciduous, petals 4-5 imbricate inserted below the disk furnished on the inside with a lobed glandular scale or crest, stamens arising from the disk 1 (or rarely 2) fertile with a subulate fleshy filament about as long as the style, 3-4 (or rarely more) sterile slender minute tipped with a gland, disk thick fleshy 4-5 lobed, ovary free or its base immersed in the disk, sessile fleshy oblique, 1-celled 1-ovuled, ovule ascending from the side a little above the base, style lateral, stigma simple, drupe generally subreniform ovoid or globose but very variable in shape and size fleshy, putamen woody fibrous indehiscent or 2 valved, seed compressed, cotyledons plano-convex, thick fleshy often lobed, radicle inferior ascending. Trees, leaves alternate petioled simple entire coriaceous, panicles terminal branched bracteated, flowers small.

MANGIFERA INDICA. (Linn.) A large tree up to 15 feet in girth, with an erect trunk covered with dark colored scabrous cracked bark, branches very numerous, leaves generally about the extremities of the branches lanceolate, often more or less waved at the margin, acute or acuminate, coriaceous glabrous and shining, 6-12 inches long by $1\text{-}2\frac{1}{2}$ inches broad, petioles $\frac{1}{2}$-2 inches long, panicles terminal always much branched often very compound puberulous or glabrous, flowers small yellowish with stripes of red near the base of the petals, male and hermathrodite mixed in the same panicle, calyx segments 5 oblong concave, petals 5 lanceolate twice as long as the calyx, disk of 5 large yellow fleshy lobes surrounding the base of the ovary, each lobe as large as the ovary, fertile anther purple, sterile filaments 2-3-4 or more. *Linn*;—*Willd. Sp.* 1. 1150.

This is the well known Mango tree; it grows to an immense size in all our mountain forests up to 4000 feet elevation, generally in ravines and on the banks of streams; the tree is most variable in the length and breadth of its leaves and form of its panicles, and the cultivated varieties differ wonderfully in the shape and size of the fruit, the tree generally flowers during the first 3 months of the year, and the fruit ripens during the next three; the wood is coarse and open grained, of a dull grey color, not durable, and soon attacked by insects; a cubic foot unseasoned weighs 52-58 lbs, and when seasoned 42 lbs, and the specific gravity is ·672; it is much in use for coffee cases, &c. and for planks; and the natives use it for building purposes; a gum exudes from the trunk. The tree is cultivated throughout tropical Asia, but really good fruit is seldom found except on grafted trees. It is called 'Am in Hindustani, Màà in Tamil, Màmadi in Teligu, and Attamba and Amba in Ceylon.

Attamba, the wild one, & Amba the cultivated one. —



Gouir Ror del. J. Dunphy Lith:

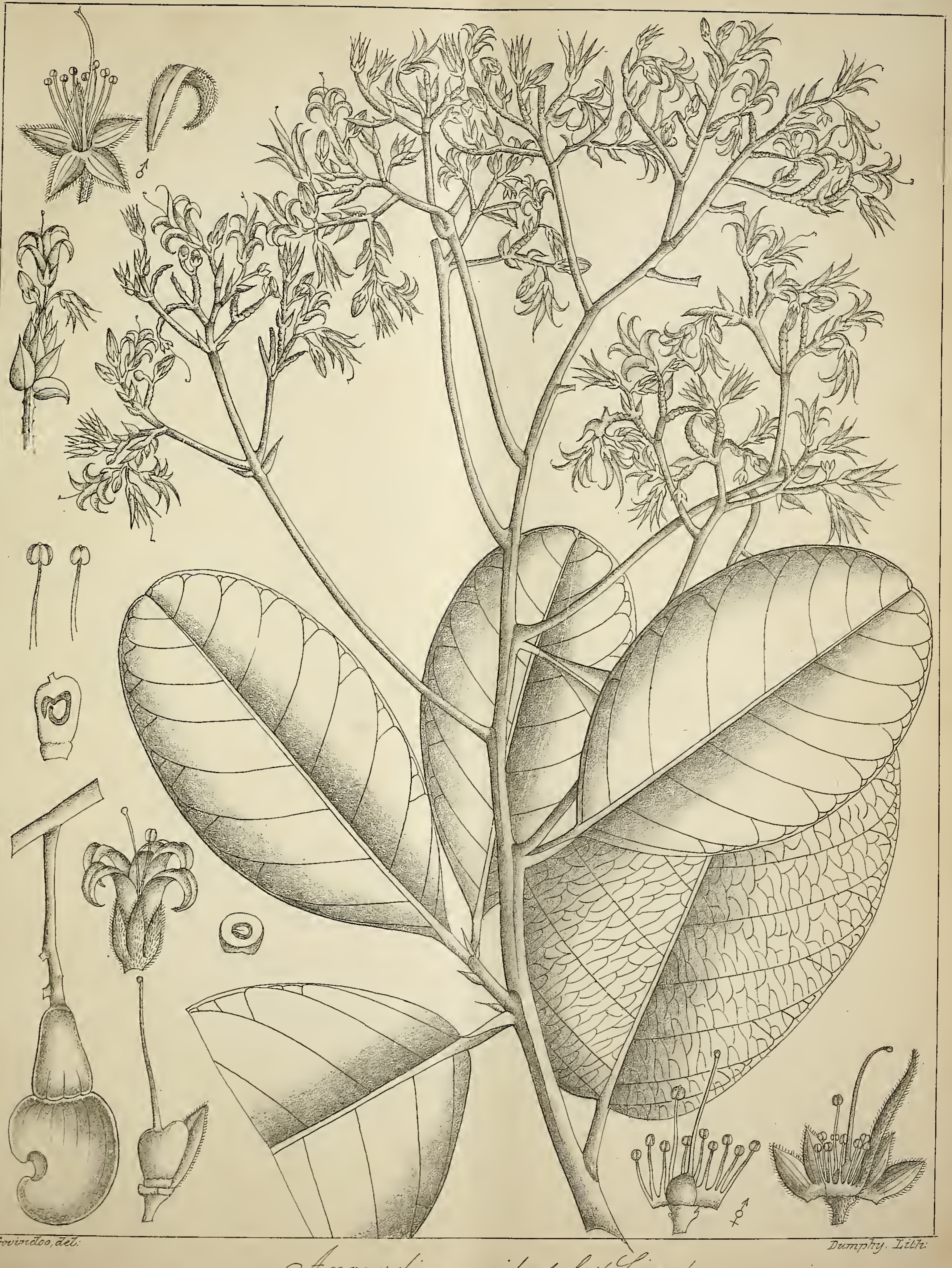
Mangifera Indica (Linn:)

ANACARDIUM OCCIDENTALE. (Nat. ord. Anacardiaceæ.)

ANACARDIUM, *Roxb.*—GEN. CHAR. Flowers polygamous, calyx 5-partite, segments imbricate erect deciduous, petals 5 narrow imbricate, disk filling up nearly the whole of the tube of the calyx and combining the base of the stamens and petals, stamens 8-10 unequal all or 1-4 only fertile filaments joined together at the base, ovary free sessile obovate or obcordate, style oblique filiform, stigma punctiform, ovule pendulous from the funicle which ascends from the side of the cell near the base, nut reniform oblique, supported on a fleshy pear-shaped enlargement of the torus and pedicel, indehiscent, pericarp thick, containing in its substance cells full of an acrid oil, seed reniform ascending, testa membranaceous adhering, cotyledons semilunate, fleshy, plano-convex, radicle short uncinate. Trees or shrubs, leaves alternate, petiolate simple coriaceous entire, panicles terminal, corymbosely-branched bracteated, flowers small.—Acajuba, *Gærtn. Fruct. t.* 40. Cassuvium, *Lam. Dict.* 1. 22. Rhinocarpus, *Bert.* Monodynamus, *Pohl.*

ANACARDIUM OCCIDENTALE. (Linn.) A middling sized or small tree, trunk short thick and crooked, bark rough and cracked, branches numerous spreading in every direction, leaves oval to obovate rounded or rather emarginate at the apex often narrowed towards the base glabrous on both sides, rather coriaceous, 4-8 inches long, 2-4 broad, petiole 2-12 lines long, panicles terminal bearing often both male and hermathrodite flowers, bractes gibbous lanceolate, calyx slightly hairy, petals linear lanceolate revolute slightly hairy on the outside, pale yellow in color streaked with pink, filaments generally 9 sterile and 1 fertile, the latter very much longer or sometimes only slightly longer than the others, in the male flower there is hardly any rudiment of an ovary but a style various in length sometimes as large as in the fertile flower with a 2 cleft apex. Ovary in the fertile flowers obcordate, stigma punctiform. *Linn*;—*DC. Prod.* ii. 62.

This is the well known Cashew nut tree, indigenous to tropical America, but long since thoroughly established all over India near the sea coast, the timber is of no value, but is occasionally used for packing cases, &c, and makes excellent charcoal; the pericarp of the nut contains an acrid oil which is used medicinally, it is very caustic, and will raise blisters on the skin; a transparent gum exudes from the trunk, not inferior to gum Arabic, which is in use as a varnish, and is said to keep off insects; and in S. America book binders wash their books with a solution of it;—the kernels are very nice when roasted and are well known as a dessert dish in India, and they yield an oil; the enlarged crimson colored pedicel to the fruit is also eaten and has an agreeable acidulous subastringent flavor; the tree is called Kàju in Hindustani.



Govindoo, del. Dumphy. Lith.

Anacardium occidentale (Linn.)

NOTHOPEGIA COLEBROOKIANA. (Nat. order Anacardiaceæ.)

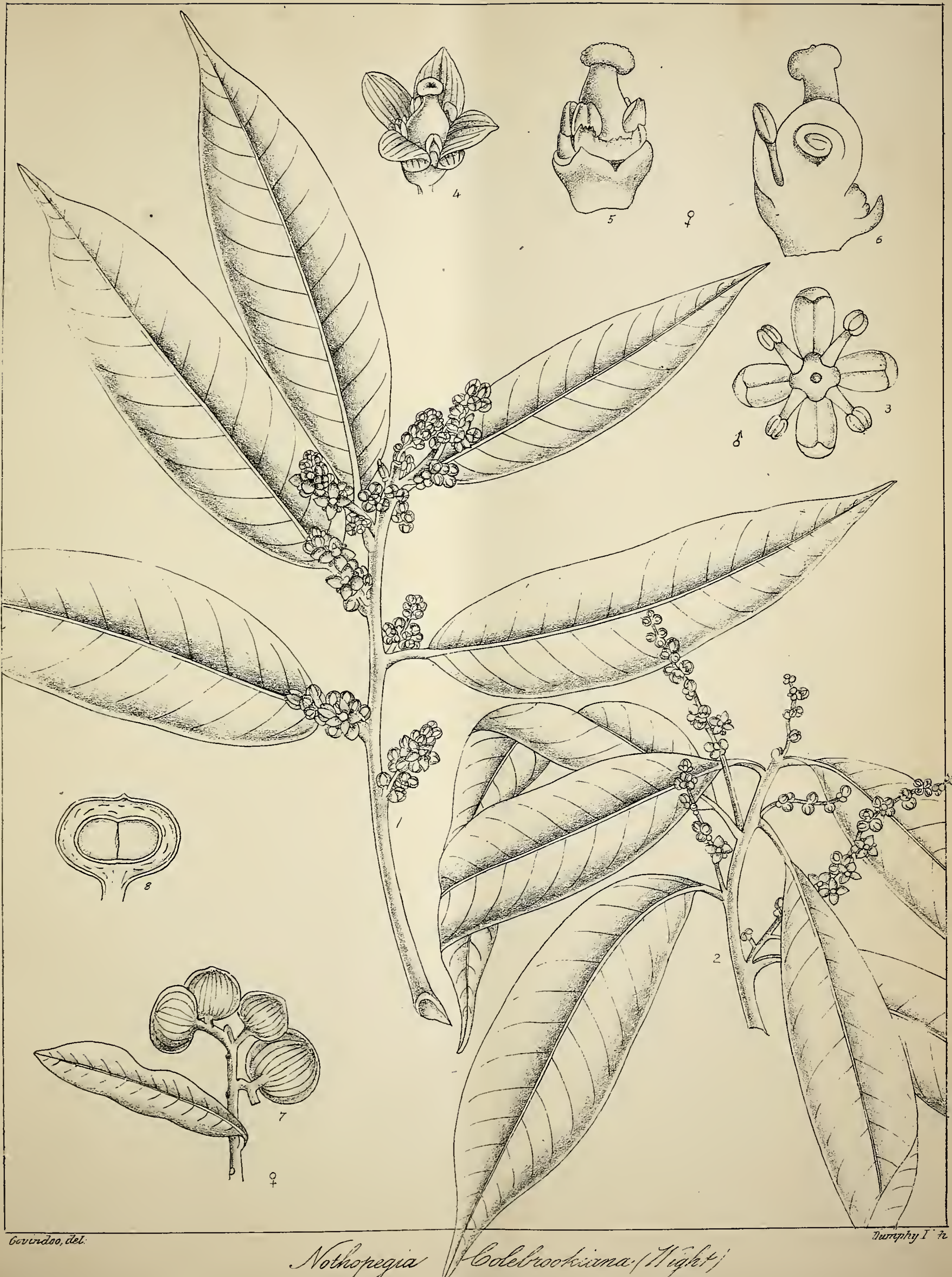
For Gen. Char. see Manual under head of this genus.

NOTHOPEGIA COLEBROOKIANA. (Wight.) A small tree, leaves coriaceous oblong to obovate entire acute or ending in a short abrupt acumen parallelly veined glabrous, racemes axillary or from the axils of fallen leaves much shorter than the leaves many flowered, flowers small white, petals linear oblong, drupe size of a cherry transversely oblong filled with sweet eatable pulp.—Pegia ? Colebrookiana, *Wight Icones tab.* 236. Glycycarpus racemosus, *Dalz. in Hook. Journ. Bot.* ii. *p.* 39. Nothopegia, *Blume Mus. Bot.* i. 203.

Common in all the Western ghat forests of this Presidency and Bombay, and also in Ceylon; called in Bombay Amberee, and in Ceylon Bălă. The drawing is from the pencil of Dr. Thwaites, and was taken from a Ceylon specimen.

Analysis.

1. Flowering branch female tree.
2. The same of the male tree.
3. A male flower.
4. Hermathrodite flower.
5. The same petals removed.
6. The same cut vertically.
7. A fruit branch.
8. Fruit cut vertically.



Govindoo, del.

Dumphy I' h

Nothopegia Colebrookiana (Wight)

BUCHANANIA LATIFOLIA. (Nat. order Anacardiaceæ.)

BUCHANANIA, *Roxb.*—GEN. CHAR. Flowers hermaphrodite. Calyx short, obtusely 3 to 5-toothed. Petals 5, imbricate in the bud. Disk orbicular, crenate. Stamens 10, inserted round the disk. Gynæcium of 5 or 6 distinct carpels, of which one only perfect, the others rudimentary and style-like; style of the perfect one short, with a truncate stigma; ovule suspended from an erect filiform funicle. Drupe small, the putamen crustaceous or bony, 2-valved. Seed with thick cotyledons and a superior radicle. Trees, leaves alternate, simple, entire coriaceous. Flowers small, white, in terminal or axillary panicles.—Coniogeton, *Blume Bijdr.* 1156. Cambessedea, *Kunth. in Ann. Sc. Nat.* ii. 366.

BUCHANANIA LATIFOLIA. (Roxb.) A good sized tree, trunk straight and often of considerable height, branches numerous spreading in every direction, leaves broadly oval to obovate very obtuse or emarginate, glabrous or subglabrous above, hirsute with rather matted hairs beneath, 6-7 inches long by 3-4 broad, petioles 6-10 lines long, panicles terminal and from the upper axils hirsute erect much branched, bractes small caducous, flowers numerous small whitish green, structure as in the genus; drupe size of a cherry a little compressed smooth and black when ripe. *Roxb. Fl. Ind.* ii. 385.

A very common tree in most subalpine jungles in this Presidency both on the eastern and western side, and ascending the mountains to nearly 4000 *feet elevation; it is also found in Bengal and Birmah, it flowers in December and January, and ripens its fruit in May. The latter is eaten by the natives, and the kernels are also eaten and used in confectionary and they abound in oil. It is called Chironji in Hindustan, Kât mâd and Aimâ in Tamil, Chara and Chinna moral in Teligu, Nuskul in Canarese, Pyal and Charoli in the Bombay Presidency, and Charu at Cuttack; the wood is rather tough and used by the natives for bullock yokes and other purposes and for charcoal, a cubic foot seasoned weighs* 36 *lbs; the bark is used by tanners.*

Govindoo. del.

Dunphy, Lith:

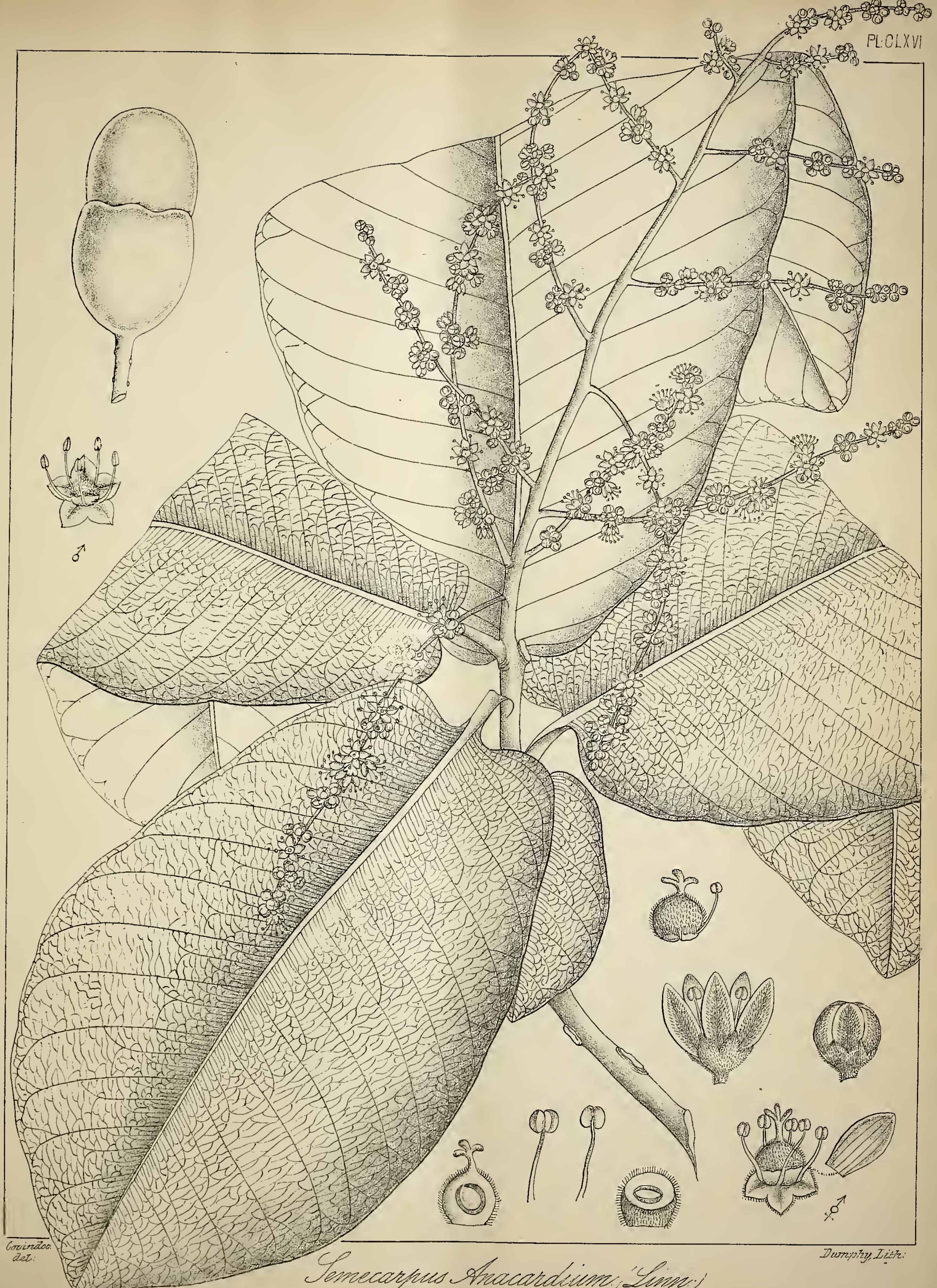
Buchanania latifolia (Roxb.)

SEMECARPUS ANACARDIUM. (Nat. order Anacardiaceæ.)

SEMECARPUS, *Linn. fil.*—GEN. CHAR. Flowers polygamous. Calyx small, 5 lobed. Petals 5, imbricate in the bud. Disk orbicular, slightly lobed or crenate. Stamens 5, inserted round the disk. Ovary 1 celled, with 3 styles, and somewhat club-shaped stigmas ; ovules suspended from the top of the cavity. Drupe or nut reniform, seated on the much-enlarged, thick, succulent, fleshy, cupular or turbinate base of the calyx, (hypocarp) pericarp thick, hard, filled with resinous cells. Seed pendulous, the testa coriaceous, somewhat fleshy inside, embryo thick, with plano-convex cotyledons and a very short superior radicle. Trees, leaves alternate; flowers small, in terminal or lateral panicles.

SEMECARPUS ANACARDIUM. (Linn.) A large tree bearing male and hermathrodite flowers on different individuals, trunk pretty straight, bark scabrous, branches numerous spreading, leaves about the apex of the branches oblong to obovate rounded at the apex entire, pretty smooth but harsh, whitish underneath 6-18 inches long by 4-8 broad, pinnate veins and veinlets conspicuous on both sides, petioles ½ to 2 inches long, panicles terminal very large composed of many simple spikes, those of the male tree more slender but as large or larger, flowers numerous small dull yellow, as in the generic character, the males smaller with a small rudiment of an ovary, hypocarp about the size of the drupe yellow when ripe. *Roxb. Fl. Ind.* ii. *p.* 83.

This is the marking-nut tree, called in Hindustani Bhilàma, in Teligu Jiri, and Bibu in Bombay ; it is common in subalpine jungles throughout this Presidency and in Bengal and Bombay ; its wood is soft and of no value ; the fruit contains the black corrosive resinous juice generally used in this country for marking linen and also in use medicinally with the natives ; the green fruit well pounded makes good bird-lime, the fleshy receptacle below the nut is sometimes roasted and eaten, and the kernels are also occasionally eaten ; the marking ink is improved in color and prevented from running by the mixture of a little quicklime water. A brown colored tasteless gum exudes from the bark.



Govindoo del:

Dunphy, Lith:

Semecarpus Anacardium, (Linn:)

HOLIGARNA LONGIFOLIA. (Nat. order Anacardiaceæ.)

HOLIGARNA, *Ham.*—GEN. CHAR. Flowers polygamo-diœcious. Calyx cup-shaped 5-toothed, teeth distant, petals 5 valvate with incurved tips villous, at length patent, disk broad annular, stamens 5 inserted round the edge of the disk, ovary inferior 1 celled, styles 3-4 (sometimes a 5th small one) terminal, stigmas reflexed crescent-shaped, ovule pendulous from one side of the cell very near the apex, drupe inferior subcompressed oblong or ovate, pericarp thick, somewhat fleshy containing between its lamina cells full of thick acrid juice, putamen coriaceous. Seed conformed to the cell, testa membranaceous, embryo thick, cotyledons plano-convex, radicle minute. Trees, leaves alternate simple petiolate entire coriaceous, petiole furnished about the middle with 2 setiform stipels, or glands, racemes or panicles axillary and terminal, flowers small, drupe acrid. *Ham. in Roxb. Fl. Ind.* ii. *p.* 80.

HOLIGARNA LONGIFOLIA. (Roxb.) A large tree, trunk straight, bark pretty smooth ash-colored, young shoots rufo-pubescent, leaves crowded about the apex of the branches, always more or less spathulate or cuneiform, broad a little below the base and thence gradually narrowed down to the petiole, retuse, rounded, or acute at the apex, glabrous on both sides, or often more or less pubescent beneath or even villous about the costa near the base, generally about 7-9 inches long and 2-3 broad below the apex, but occasionally up to nearly 2 feet in length, petioles glabrous or rufo-pubescent $\frac{1}{4}$-1 inch long furnished about the middle or a little below it with 2 subulate recurved generally villous stipels, panicles (rarely racemes) terminal and from the upper axils, male and fertile on different trees, always more or less pubescent sometimes densely rufo-tomentose, petals valvate closely cohering at their sides at length patent, tips incurved, male flowers smaller than the fertile, the 5 stamens seated round the margin of the evident disk exserted, with large versatile anthers, rudiment of an ovary 0, or very small; fertile flowers with the stamens very small seated round the margin of the disk, anthers small and effete, ovary quite sunk except its hairy apex in the disk and calyx tube, styles 3-4 (rarely a 5th small one in the centre), stigmas broad flat recurved jagged at the edge and acute at the apex sometimes slightly hairy, fruit ovate to oblong, size of an olive, as in the generic character. *Roxb. Fl. Ind.* ii. 80.

This tree is very common about the Western ghats of this Presidency fom Canara down to Cape Comorin, and is also found in the plains and close to the sea. I have copious specimens from all parts; it also occurs in Bombay and Bengal, but is absent from Ceylon; in South Canara it is called Kagira, and in the Bombay Presidency Hoolgeree; a very acrid black juice is extracted from the trunk and from the fruit rind, which is used by painters and as a black varnish, and the fruit and bark are used medicinally. I have never known the timber to be used, but in some parts it is said to be in use for house building, and boats are made of it. The specimen figured is from S. Canara; the analysis from fresh flowers.

Analysis.

1. Petiole showing the stipel-like bodies.
2. A male bud showing the cup-shaped calyx with 5 distant teeth.
3. A male flower showing the exserted stamens.
4. Male flower open.
5. The same petals removed, showing the 5 stamens inserted round the margin of the annular disk.
6. Anther, front and back view.
7. Fertile flower-bud showing calyx and valvate petals.
8. A full fertile flower.
9. Petals removed.
10. Fertile flower (calyx-teeth and 2 petals removed) showing the small effete stamens inserted round the margin of the torus, the apex of the ovary (the hairy coating removed) and the styles.
11. Vertical section of the same showing the solitary ovule pendulous from nearly the apex of the cell.
12. Apex of an ovary showing 4 styles and stigmas.
13. The same showing 3 styles and stigmas.
14. The same showing a small 5th style present.
15. The effete anthers of the fertile flower.
16. Young fruit.

Govindoo, del. Dunphy Lith:

Holigarna longifolia, Roxb.

CAMPNOSPERMA ZEYLANICUM. (Nat. order Anacardiaceæ.)

CAMPNOSPERMA, *Thw.*—GEN. CHAR. Flowers hermathrodite, calyx 3 partite persistent, divisions erect imbricate, petals 3 sub-orbicular erect imbricate, disk urceolate. Stamens 6 iuserted at the base of the disk, ovary free sessile ovate, 1 celled, style very short and thick, stigma broad peltate aud lobed, ovule pendulous from the apex of the cell; drupe fleshy ovate, putamen bony, the cavity semi 2-celled in the upper half from a pendant bouy process, seed pendulous arcuate, cotyledons plane oblong arcuate, radicle short superior terete. A tree, leaves alternate simple entire, panicles simple; flowers minute. *Thw. in Hook Kew Journ.* vi. 65. *fig.* i.

CAMPNOSPERMA ZEYLANICUM. (Thw.) A tree 30-40 feet, ramous, branches terete young parts and young leaves ferruginous, leaves lanceolate to obovate-lanceolate, gradually attenuated at the base penniveined and reticulated, below minutely rufo-punctate, 3-4 inches long by $\frac{3}{4}$-$1\frac{1}{2}$ broad, flowers 2 lines long 1 bracteolate. *Thw. l. c.*

Ceylon, not uncommon on the banks of streams at Ratnapoora and the lower part of the Saffragam district up to about 1,000 *feet elevation.*

The dissections are from a drawing by Dr. Thwaites.

Govindoo, del:

Dunphy. Lith:

Campnosperma Zeylanicum (Thw.)

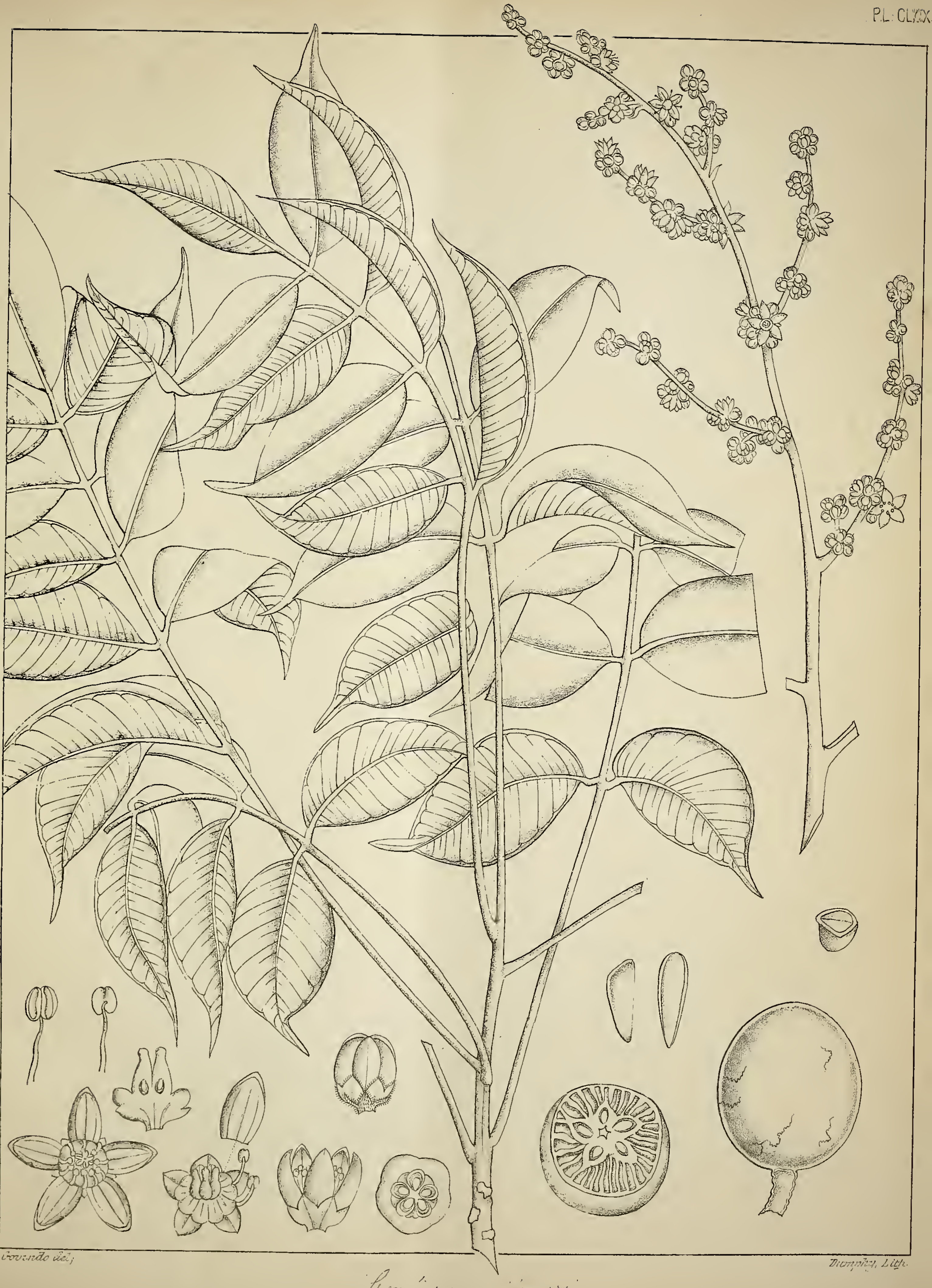
SPONDIAS MANGIFERA. (Nat. order Anacardiaceæ.)

SPONDIAS. *Linn.*—GEN. CHAR. Flowers polygamous. Calyx small, 4 or 5-lobed or divided to the base. Petals 4 or 5, spreading, almost valvate in the bud. Disk orbicular, crenate, stamens twice as many as petals, inserted round the disk. Ovary 3 to 6-celled, with as many short conical connivent styles; ovules solitary in each cell, pendulous. Drupe with a fleshy epicarp, the putamen hard and bony, the cells erect or vertically curved and diverging at the top, the putamen pierced with a foramen corresponding to the apex of each cell. Seeds solitary in each cell pendulous; testa membranous; embryo straight or slightly curved with the seed; cotyledons oblong, radicle superior. Trees, leaves crowded at the ends of the branches, pinnate; flowers small, in terminal or axillary panicles.—Evia, *Comm.* Cytherea, *WA.* Poupartia, *Comm.*

SPONDIAS MANGIFERA. (Pers.) A large tree, trunk straight, bark smooth ash-colored astringent, leaves alternate about the ends of the branches, pinnate with an odd one 12-20 inches long, petiole terete, leaflets 4-5 pair opposite or subopposite ovate to elliptic-oblong rather abruptly acuminate oblique at the base quite entire glabrous prominently veined, 3-6 inches long by 2-2½ broad, panicles terminal large diffuse, flowers numerous small white often barren, disk large fleshy crenate, anthers alternately shorter incurved about ½ as long as the petals, styles 5-6, ovary 5-6 celled, drupe oval or nearly round yellow when ripe about 1¼ inch across. *Roxb. Fl. Ind.* ii. 451. Evia amara, *Commers.* Ambalam, *Rheede Mal.* 1. *p.* 89. t. 50.

This is a common tree in jungles throughout this Presidency, and in Ceylon it ascends the mountains to about 3500 *feet; it is known to Europeans as the Hog plum, and is called àmrà in Hindustani, Kàt màa in Tamil, and Aravi màmadi in Teligoo (names signifying wild mango); its fruit is eaten raw when ripe, and unripe it is pickled and preserved, and eaten in curries; the wood is soft and of little or no value, and a gum much like Gum Arabic exudes from the trunk; the leaves are agreeably acid. In the Anamallays it is called Puli ille by the Kaders.*

PL: CLXIX.



Govindo del.; Dunphy, Lith.

Spondias mangifera W.

ELLIPANTHUS UNIFOLIATUS. (Nat. order Connaraceæ.)

ELLIPANTHUS. *Hook fil.*—GEN. CHAR. Flowers polygamous, calyx 5 parted not increasing in size after flowering suberect valvate, petals 5 longer than the calyx oblongo-lanceolate pubescent imbricate, stamens 5 fertile alternate with as many shorter sterile ones, filaments short subulate connate at the base into a hirsute tube, carpel 1 ovoid strigose attenuated into a short style, stigma lobulate; capsule stipitate volutinous, glabrous within, seed arillate at the base, exalbuminous. Trees or shrubs, leaves short petioled 1 foliate, oblong or lanceolate glabrous or slightly tomentose beneath, racemes short axillary tomentose, flowers small.

ELLIPANTHUS UNIFOLIATUS. (Thw.) A middling sized tree 20-30 feet high, branches and petioles blackish, young parts fusco-pilose, leaves 1-foliate glabrous elliptic or ovate abruptly acuminate reticulate, $1\frac{3}{4}$-$3\frac{1}{2}$ inches long by 1-$1\frac{3}{4}$ inches broad, petiolule tumid 1 line loug rugulose articulate with the petiole which is 3 lines long, panicles small axillary 1-2 or 3 together racemiform 4-7 flowered, fusco-hirsute, bracteoles linear deciduous, flowers pale green about 3 lines in expansion, short pedicelled, calyx divisions acute, petals externally pilose twice as long as the calyx, stamens 5 joined into a tube alternate with 5 minute teeth-like staminodes, ovary strigose attenuated into a short style, stigma dilated, fruit fulvo-tomentose arcuato-falcate acute attenuated at the base into a stipe.—Connarus unifoliatus, *Thw. En. Pl. Zey. p.* 80. Ellipanthus, *Benth. and Hook. Gen. Pl.* 1. *p.* 434.

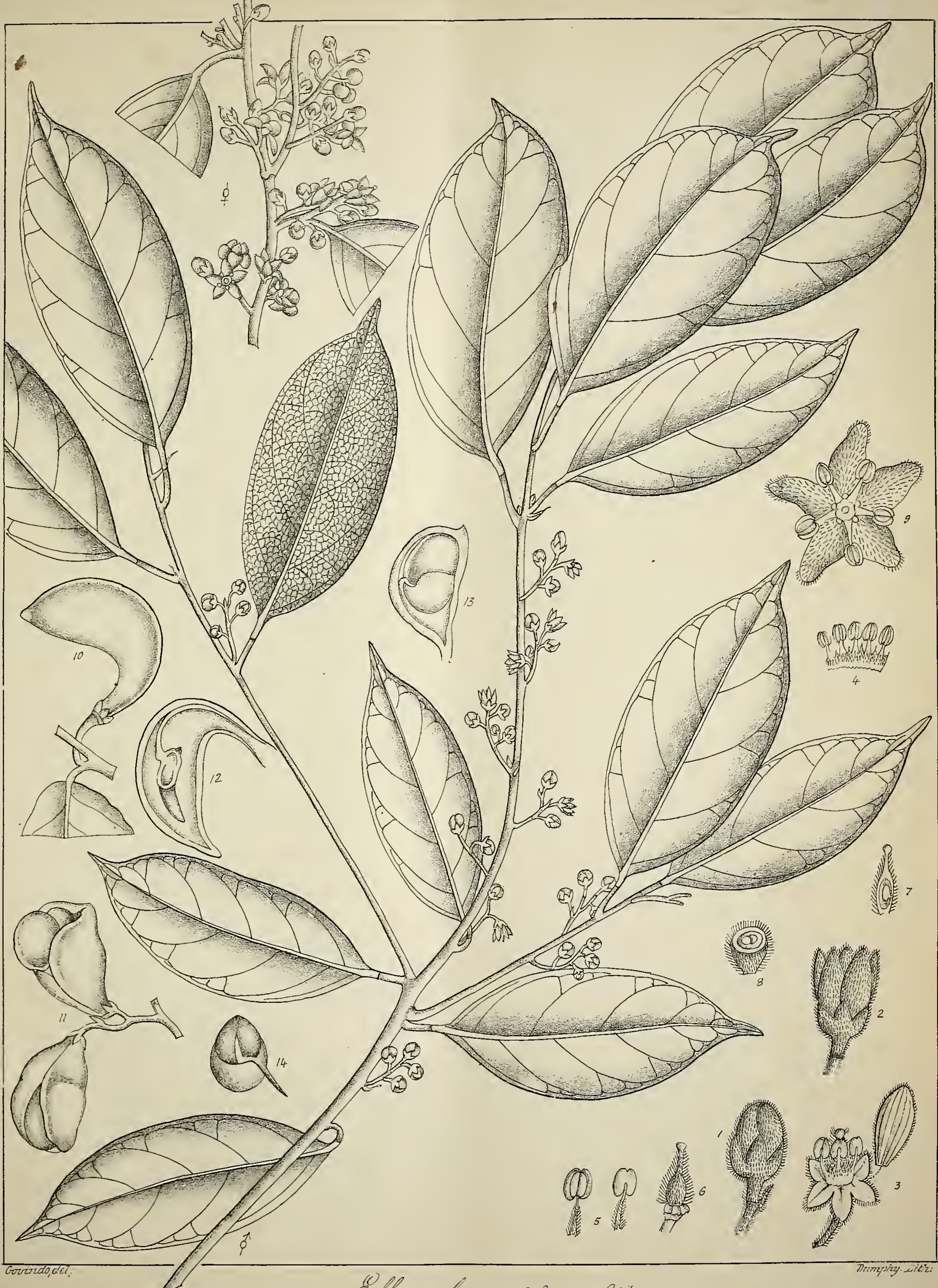
Ceylon in the central provinces, 3-4000 *feet, rather a rare tree.*

Analysis.

1. A flower bud.
2. A flower.
3. A fertile flower, petals removed.
4. Stamen tube showing the 5 fertile stamens alternate with 5 minute staminodia.
5. Anthers, front and back view.
6. Ovary.
7. The same cut vertically.
8. The same cut transversely.
9. A sterile flower.

10 to 14. Fruit and seed.

(Figures 9—14 communicated by Dr. Thwaites.)



Govindo, del. Dumphy, lith.

Ellipanthus unifoliatus (Thw.)

COCHLOSPERMUM GOSSYPIUM. (Nat. order Ternstræmiaceæ.)

This tree is fully described in the Manual, vide page xiv.

Govinda, del:

Dumphy, Lith:

Cochlospermum Gossypium, (D.C.)

XYLOPIA PARVIFOLIA. (Nat. order Anonaceæ.)

For Gen. Char. see Manual, p. ix.

XYLOPIA PARVIFOLIA. (Hook. fil. et T.) A very lofty straight tree, 60—80 or even 100 feet to the first bough, and then forming a small dense head, trunk of no great thickness, 4-6 feet in girth, always furnished with considerable buttresses at the base, which extend up the trunk 6-10 feet from the ground, young branches slightly puberulous, leaves elliptic oblong with a short acumination, slightly coriaceous shining and glabrous above except the costa, slightly glaucous and glabrous beneath except the costa, about 3 inches long by 1-1¼ broad, petioles puberulous 3-4 lines long, inflorescence axillary pubescent, peduncle very short 3-flowered, pedicels scarcely more than 1 line long bibracteolate at the apex below the calyx, calyx small cup-shaped 3-toothed, exterior petals thick about 9 lines long, interior a little shorter triquetrous except at the hollow base, torus conical, ovaries 3-4 (5-6 Ceylon specimens) densely strigose hid in the torus, style long glabrous, stigma very large slightly hairy, connective of the anthers truncate capitate, ovules 4.

This lofty straight tree is abundant in the moist forests about the foot of the Travancore ghâts in the vicinity of Colatoorpalay, where I discovered it in flower this August; it is the first time the genus has been observed on the continent; it also inhabits the south of Ceylon, and is mentioned in the Manual at page ix. *as a Ceylon tree. I have carefully compared the Travancore specimens with dried specimens of the Ceylon plant, and I can detect no difference, though the latter is described as a small tree or shrub. Dr. Thwaites says that the flowers and bark are used by the Cinghalese for chewing with their betel.*

Bedd. Ic. t. 43. also on the

Govindoo, del. Dumphy lith.

Xylopia parvifolia (Hook fil et T.)

GARCINIA TRAVANCORICA. (Nat. order Guttiferæ.)

For Gen. Char. see letter press to Pl. lxxxv.

GARCINIA TRAVANCORICA. (Bedd.) A middling sized tree, leaves very coriaceous narrow oblong to sub-spathulate very obtuse, dark green and shining above paler beneath, 3-4 inches long by about 1 inch broad, primary veins straight and at nearly right angles with the costa, veinlets forming a beautiful net work and very conspicuous on the under side, petioles about $\frac{1}{2}$ to 1 inch long, 2 outer calyx segments much smaller than the 2 inner, petals rounded; male flowers on very short terminal panicles or racemes which are 1-2 inches long and 5-15 flowered and furnished with small bractes at the ramifications, pedicels very short thickened, stamens in 4 many-fid polyandrous phalanges, anthers about 100 in each phalanx, 2-celled dehiscing longitudinally, no rudiment of an ovary, style thick 2 lines long, stigma very large peltate convex above, exactly like a mushroom, glutinous; female flowers solitary or twin in the terminal axils, ovary with a very large convex glutinous stigma, 4 celled, effete stamens in 6-8 phalanges each with 2-4 thin filaments, fruit oblong to subglobose, $1\frac{1}{4}$ to $1\frac{3}{4}$ inches long, crowned with the enlarged peltate stigma, seeds 15 lines by 7 lines broad, long, flat on the inner face, 1-2 come to maturity, testa bright brown.

This very beautiful species is the No. 2 referred to in Manual, page xxi. *I only procured it last month (August) in flower, and in ripe fruit at the same time; the tree is confined to the southern portions of the Travancore and Tinnevelly ghat forests (*3000-4500 *feet elevation), but is most abundant in localities where it grows (Muti-kuli vayal Travancore, Calcad hills Tinnevelly); every portion of the tree yields abundance of a bright yellow gamboge, which has not been examined yet; it is a highly ornamental tree, and seed has been transmitted to the Ceylon and Bangalore Botanical Gardens, it is called Malam pongu in Tinnevelly.*

Govindo del: Dumphy Lith:

Garcinia Travancorica, (Bedd.)

ELÆOCARPUS VENUSTUS. (Nat. order Tiliaceæ.)

For Gen. Char. see letter press to Pl. cxi.

ELÆOCARPUS VENUSTUS. (Bedd.) A large tree, glabrous in all its parts except the flowers, leaves elliptic to oblong or sometimes obovate, slightly acute or quite rounded at the apex atteuuated at the base, serratures shallow distant and inconspicuous, coriaceous, 3-4½ inches long by 1½-2 broad, furnished with very large glands in the axils of the primary veins beneath, which often terminate in a pointed or bifid process raised above the lamiua of the leaf, the glands form prominent convex marks on the upper side of the leaf, petioles 6-8 lines long, racemes axillary lax 4-8 flowered as long or a little longer than the leaves, pedicels distant 12-16 lines long with a minute deciduous bracteole at the base of each, flowers 12-16 lines in expansion pure white aud very fragrant, calyx glabrous on the outside, pubescent within, divisions thick and coriaceous, petals a little longer than the calyx 3 cleft with each division 5-6 fingered, rather densely silky on the outside, nearly glabrous within except the hairy raised process at the base, the linear anthers and filaments hairy, the upper valve with a short point, ovary glabrous 2 celled, cells with 6 ovules in 2 rows, style subulate very slightly hairy, drupe not seen.

A fine large tree only observed in the Muti-kuli vayal, South Travancore, 4500 *feet elevation, in flower in August; it is truly beautiful when covered with its snow white large flowers, which it produces in great abundance; it has only just been discovered, and should be added to the Manual at page* xxxviii.

Govindu, Del:

Dunphy Lith:

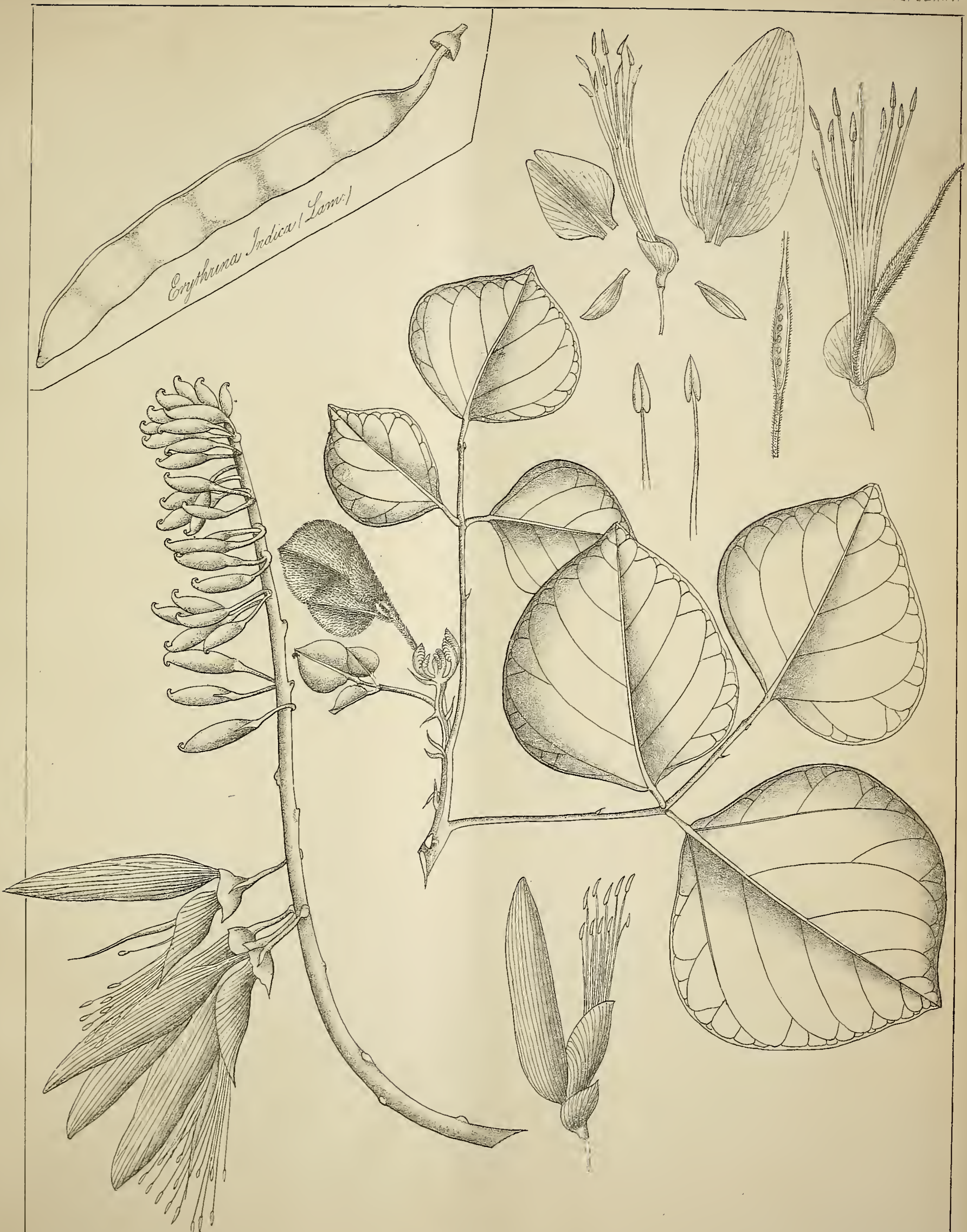
Elæocarpus venustus (Bedd:)

ERYTHRINA STRICTA. (Nat. order Leguminosæ.)

ERYTHRINA. *Linn.*—GEN. CHAR. Calyx campanulate or cylindrical, obliquely truncate or slit on the upper side, entire or toothed. Standard broad or long, erect or recurved, narrowed at the base, without appendages ; wings short, often minute or none ; keel short, the petals united or free. Stamens all united at the base, the upper one often free from the middle, anthers reniform. Ovary stipitate, with several ovules, style subulate, oblique at the end, with a small stigma. Pod stipitate, linear-falcate, acuminate, narrowed at the base, more or less contracted between the seeds, 2 valved, usually pithy between the seeds. Seeds distant, ovoid or oblong, with a lateral oblong hilum, not strophiolate. Erect trees or shrubs, rarely tall herbs, the trunk, branches, and often the petioles armed with conical prickles. Leaflets 3, usually broad, entire or 3-lobed, the stipellæ usually gland-lik. Stipules small. Racemes axillary, or, if terminal, leafy at the base. Flowers large, usually red, in clusters of 2 or 3 on lateral nodes along the peduncle. Bracts small or none.—Micropteryx, Duchassaingia and Macrocymbium, *Walps.* Stenotropis and Hypaphorus, *Hassk.* Chirocalyx, *Meissn.*

ERYTHRINA STRICTA. (Roxb.) A large tree armed with numerous white prickles, stipules falcate, petioles sometimes prickly, leaves unarmed, leaflets glabrous entire, the terminal one reniform-cordate pointed ; racemes terminal horizontal, calyx spathaceous entire acute short, vexillum about 10 times as long as the calyx and twice the length of the keel, keel 4-5 times longer than the alæ, its petals united. Stamens monadelphous with the sheath entire at the base, diadelphous upwards, ovary 4-8 ovuled, legume usually 2-3 seeded. *Roxb. Fl. Ind.* iii. *p.* 251 ;—*WA. Prod. p.* 260.

This tree is very common on the western side of the Madras Presidency ; the wood is soft, light and spongy (as in all the other Erythrinas) ; it is employed as a substitute for deal, and is much in use in the manufacture of toys, trunks, &c. and is afterwards varnished, its large pores admitting and retaining the varnish better than almost any other wood, the wood is not liable to warp, contract, or split.



Govindo del. Dunphy. Lith.

Erythrina stricta. (Roxb.

BUTEA FRONDOSA. (Nat. order Leguminosæ.)

BUTEA. *Roxb.*—GEN. CHAR. Calyx campanulate bilabiate, upper lip almost entire, lower 3-fid, vexillum ovate acute recurved inappendiculate, alæ falcate adhering to the keel, keel much incurved acute equalling the vexillum. Stamens diadelphous 9 and 1, the vexillum-one free, anthers uniform, ovary sessile or shortly stipitate 2 ovuled, style elongate incurved, stigma small glandular, legume subsessile or stalked oblong or broadly linear 2 valved and 1 seeded at the apex only, below flat compressed rather thin, indehiscent. Trees or lofty climbers, leaves pinnately 3 foliate, stipules small caducous, flowers large orange or flame colored, fascicled in racemes or panicles.

BUTEA FRONDOSA. (Roxb.) A middling sized tree, trunk generally crooked covered with ash-colored spongy thick scabrous bark, the middle stratum of which contains a red juice, young shoots downy, leaves alternate pinnately 3-foliate 8-16 inches long, leaflets emarginate or rounded at the apex, coriaceous above shining and pretty smooth below slightly hoary, the 2 lateral ones obliquely oval, 4-6 inches long 3-4½ broad, the terminal one obovate and much larger than the others. Stipules small recurved downy, stipels subulate, racemes simple lax terminal axillary and from nodes over the naked branchlets, pedicels about twice as long as the calyx, calyx segments short slightly acute several times shorter than the tube, bractes lanceolate caducous, 1 below each pedicel and 2 below the calyx, corol densely pubescent 4-5 times larger than the calyx, of an orange red mixed with silvery down, vexillum ovate acute, legume as in the generic character about 6 inches long downy. *Roxb. Fl. Ind.* iii. *p.* 244.

This tree is common throughout the dry jungles in this Presidency and in Bengal, Bombay and Ceylon ; it is a very beautiful sight when in full flower in March and April ; it is called Palâs in Hindostanee, and gave its name to the field of Plassey as it was covered with this tree, in Teligu it is called Modugu, Thoras in Canarese, and in Ceylon Gass-kaala. The wood somewhat resembles Teak in appearance, and is used for gun-powder charcoal, also for building purposes and well curbs ; a red colored astringent gum exudes from wounds made in the bark and is officinal, and the flowers yield a dye ; ropes are made from the fresh fibre of the roots.

Govindoo, del.

Dumphy. Lith.

Butea frondosa. (Roxb.)

PONGAMIA GLABRA. (Nat. order Leguminosæ.)

PONGAMIA. *Vent.*—GEN. CHAR. Calyx truncate. Standard orbicular, with inflexed auricles at the base; keel slightly incurved, obtuse. Upper stamen free at the base, connate with the others in a tube in the middle; anthers uniform. Ovary nearly sessile, with 2 ovules; style incurved, stigma small, terminal. Pod broadly and obliquely oblong or slightly falcate, thick but flat, 1-seeded, indehiscent, the sutures obtuse, without wings. Seed reniform. Tree, leaves pinnate, without stipellæ. Flowers in axillary racemes. Bracts very deciduous; bracteoles minute or none.—Galedupa, *Lam.*

PONGAMIA GLABRA. (Vent.) A middling sized tree, glabrous except a very slight pubescence on the inflorescence. Leaflets 5 or 7, ovate, shortly and obtusely acuminate, usually broad, about 3 inches long, on a rather long petiole, but variable in size. Racemes sometimes panicled, about 3-5 inches long. Flowers in pairs, the pedicels 2 to 4 lines long. Standard about ½ inch diameter, lower petals shorter. Pod usually 1½ to 2 inches long, and about 1 inch broad, sessile or nearly so, often somewhat falcate or with a very short incurved point. *Benth. Syn. Dalb.* 117.

This tree is most abundant throughout South India in the plains, also in Bengal, Bombay and Ceylon, generally on the banks of streams or near water; it is called Pongà in Tamil; Kanigà in Teligu, Karunj in Bombay, Magool Karanda in Ceylon; *the wood is light, tough and fibrous, coarse and even grained, of light yellowish brown color, not easily worked nor giving a smooth surface; it is improvd in strength and color by being seasoned in water; a cubic foot unseasoned weighs* 48 *to* 55 *lbs., and* 40 *lbs. when seasoned, and its specifie gravity is* ·640; *it is used for a variety of purposes, and the solid Wheels of the wodar carts are often made of it. An oil is expressed from the seed, which is used by the natives for lamps, and it is an excellent cure for itch and mange; the tree generally sheds its leaves at the end of the cold season; its flowers which are a mixture of white and purple are produced in the hot season, and its seed ripens towards the end of the year. Cattle are very fond of the leaves, boughs stuck into the ground root readily, and grass and almost everything else grow well under its shade.*

Govindoo, del. Dunphy, Lith.

Pongamia glabra. (Vent.)

POINCIANA ELATA. (Nat. order Leguminosæ.)

POINCIANA. *Linn.*—GEN. CHAR. Sepals 5 equal or subequal united below into a very short cup-shaped somewhat persistent base, petals 5 orbicular imbricate subequal or the upper one shaped differently from the others, stamens 10 free much longer than the petals, slightly villous at the base, anthers, uniform, cells dehiscing longitudinally, ovary sessile free many-ovuled, style filiform or abbreviated, apex slightly clavate, stigma truncate, legume elongate flatly compressed wingless 2 valved several seeded intercepted internally between the seeds, seed transverse oblong albuminous, hilum small, testa hard. Cotyledons rather thick, radicle short straight exserted. Unarmed trees, leaves bipinnate, leaflets numerous small, stipules inconspicuous, stipels none, flowers showy corymbosely racemed at the apex of the branches.

POINCIANA ELATA. (L.) A middling sized very showy tree, 20-30 feet, bark pretty smooth ash-colored, branches numerous spreading much, leaves alternate bipinnate about 6 inches long, pinnæ 2-8 pair opposite, leaflets 10-20 pair sessile opposite linear glabrous about 4 lines long by 1 broad, petiole grooved on the upper side, racemes terminal corymbiform few flowered, flowers large showy inodorous yellowish, bracts small 1 flowered caducous, calyx villous on the outside, petals 5 of which the upper one is a little smaller and deeper colored, all nearly round and much curled at the margin, filaments ascending afterwards recurved, twice as long as the petals, thick and villous at the base, anthers versatile. *Roxb. Fl. Ind.* ii. *p.* 355.

A very beautiful tree, rather rare in our jungles, though met with in the forests of both the eastern and western coasts; most abundant in a planted state in avenues, topes, gardens, native cemeteries, &c., the wood is yellow, tolerably close and even grained, easily worked and gives a smooth surface, warps slightly but never cracks; a cubic foot unseasoned weighs 54-58 *lbs., and when seasoned* 45 *lbs., the specific gravity is* ·720, *it is well suited for cabinet work.*

+ At Tuticorin in March & April 1875 delightfully fragrant

Govindoo. del:

Dumphy, Lith:

Poinciana elata (Linn)

SIAMEA

CASSIA FLORIDA. (Nat. order Leguminosæ.)

CASSIA. *Linn.*—GEN CHAR. Sepals 5, somewhat unequal, much imbricate, the outer ones the smallest, scarcely connected at the base. Petals 5, spreading, nearly equal or the lower outer ones rather larger. Stamens usually 10, free, either all nearly equal and perfect or 2 or 3 lower ones larger or on longer filaments, and 3 or 4 upper ones reduced to small staminodia ; anthers when perfect opening at the end in pores or in short lateral slits. Ovary with several ovules, incurved, tapering into a short style. Pod cylindrical or flat, indehiscent or 2 valved. Seeds oblong or obovate, transverse, with fleshy albumen, cotyledons flat or rarely folded, usually cordate ; radicle short, straight. Trees, shrubs or herbs, leaves abruptly pinnate, the leaflets opposite. Flowers yellow or very rarely reddish-purple or white, in axillary or terminal racemes or solitary. Bracts usually deciduous. Bracteoles none.—Cathartocarpus, *Don.* Senna, *Gært.* Chamæfistula, Chamæsenna, Chamæcrista and Fistula, *DC.* Absus, Prososperma and Psilorhegma, *Vog.*

CASSIA FLORIDA. (Vahl.) A middling sized tree, trunk pretty straight and covered with smooth olive colored bark, branches few spreading, leaves alternate pinnate 6-12 inches long, leaflets 4-14 pair short petioled opposite oblong entire somewhat emarginate with a bristle point, smooth shining, the exterior pairs largest, 1-3 inches long by $\frac{1}{2}$-1 inch broad, petioles smooth channelled without glands, stipules minute subulate caducous, panicles terminal very large erect ovate composed of many alternate corymbiform racemes, peduncles pubescent, flowers numerous large bright yellow, pedicels subtended by an oblong-lanceolate concave long pointed bracteole, calyx segments unequal pale yellow roundish concave reflexed about $\frac{1}{3}$rd the length of the corol, corol with the upper petal small long clawed and obcordate, the other 4 nearly equal and almost round, stamens 7 fertile differing much in size and 3 barren and small, legumes linear thin, swelled a little at the seeds smooth, both margins rounded 6-8 inches long, seeds many thin oval of a dark brown color. *W.A. Prod. p.* 288. Senna Sumatrana, *Roxb. Fl. Ind.* ii. *p.* 347.

This tree is common in a wild state in the jungles quite at the south of this Presidency and in Ceylon, and it is common everywhere as a planted tree in avenues, topes, gardens, &c., it is of rapid growth and ornamental, the wood is of a yellowish brown color, sometimes beautifully marked with irregular black streaks, close grained, hard and durable, but not stiff, works kindly with a smooth surface and stands a good polish, a cubic foot unseasoned weighs 68-70 *lbs., and when seasoned* 58 *lbs., and its specific gravity is* ·928, *it is well adapted for furniture but seems to be little known or used in this Presidency, in Birmah it is used for mallets, helves and walking sticks, in Ceylon it is the principal fuel used for the Locomotives, and it is said to have as good caloric powers as any wood known in the island. In Ceylon it is called Waa, and in Tamil Manje konne.*

Govindoo. del: 	Dunphy Lith:

Cassia florida. (Vahl.)

CASSIA ROXBURGHII. (Nat. order Leguminosæ.)

For Gen. Char. see letter press to Pl. clxxix.

CASSIA ROXBURGHII. (DC.) A small or middling sized tree, tolerably straight, covered with deeply cracked brown colored bark, branches numerous beautifully drooping, young shoots with the petioles and peduncles pubescent, leaves alternate pinnate 6-10 inches long, leaflets 10-20 pairs oblong unequal sided obtuse or emarginate and mucronate, pubescent beneath, about 1 inch long by ½ inch broad, the margins colored and slightly thickened, petioles channelled, stipules semi-saggitate, racemes axillary solitary much shorter than the leaves, bractes 3 lanceolate the 2 inner on the base of the pedicel and much smaller than the other, flowers middling sized pink, petals nearly equal, stamens all fertile, the 3 lower much the largest with a double curve below the middle and the anthers with 2 clefts, the 7 upper ones short incumbent with the anthers opening by 2 pores, legumes pendulous indehiscent cylindric 8-12 inches long 6-8 lines in diameter, dark brown torose and somewhat ligneous, divided by transverse partitions into many cells, seeds lodged in a soft white spongy substance. *WA. Prod. p.* 286. Cassia emarginata, *Roxb. Fl. Ind.* ii. 338.

This tree is very common in a wild state in the South Arcot, Trichinopoly, Tanjore, and Tinnevelly districts ; it is extensively planted in gardens for ornamental purposes, and is to be seen in most compounds at Madras ; when in flower it is exceedingly beautiful, it is also wild in Ceylon, and is there calld Ratu-wàa, the wood is close grained, hard and durable, works smoothly and stands a good polish, when fresh it is deep rose colored but eventually turns reddish brown. A cubic foot unseasoned weighs 75-80 *lbs., and when seasoned* 63 *lbs., and its specific gravity is* 1·008 ; *it is well adapted for articles of turnery, such as naves of wheels and handles of instruments.*

[illegible] del. Dunphy. Lith:

Cassia Roxburghii, D.C.

DIALIUM OVOIDEUM. (Nat. ord. Leguminosæ.)

DIALIUM. *Linn.*—GEN. CHAR. Calyx tube very short, segments 5 much imbricate herbaceous or petaloid, petals 0 or 1-2 small, stamens 2 rarely 3 free, filaments short, anthers oblong erect affixed at the base, cells dehiscing longitudinally, ovary sessile at the bottom of the calyx, or on a stipe adnate to the calyx tube, 2-ovuled, style short subulate, stigma terminal small, legume ovato-orbicular, slightly compressed or ovoid-globose indehiscent, exocarp hard or fragile, endocarp generally pulpy. Seed 1, more or less compressed albuminous, cotyledons flat foliaceous or slightly fleshy, radicle short straight subincluded. Trees unarmed, leaves unequally pinnate, leaflets few generally alternate coriaceous, or submembranaceous, stipules small or inconspicuous, flowers small in axillary or terminal cymose panicles, bractes and bracteoles deciduous.—Codarium, *Soland.* Arouna, *Aubl.*

DIALIUM OVOIDEUM. (Thw.) A very large tree, leaflets 5 lanceolate, retuse at the apex, glabrous above, sparingly and very minutely puberulous beneath, 2-3 inches long $\frac{3}{4}$-$1\frac{1}{4}$ broad, petiolule tumid 2 lines long, panicles terminal adpressedly incano-pilose longer than the leaves, bracteoles lanceolate soon deciduous, flowers white about 3 lines long a little longer than the pedicels, sepals ovate-lanceolate, petals none, anthers extrorse, ovary sessile on an inconspicuous ring-like disk, stigma obtuse, legume ovoid dark brown velutinous sparingly compressed subsessile, 7-8 lines long by 5-6 lines broad, seeds 1-2 roundish compressed striated shining yellowish or reddish-brown, 4 lines long. *Thw. En. Pl. Zeyl. p.* 97.

A valuable timber tree, only found in Ceylon (districts north of Kandy, at no great elevation), called Gal-Seyembala ; the wood is strong and handsome, and well adapted for ornamental furniture ; the fruit has an agreeable acid flavour, and is sold in the bazaars.

Analysis.

1. A very young flower-bud, showing the 2 bracteoles which are early deciduous.
2. A flower.
3. The same open, showing the 5 sepals, 2 stamens, and the ovary.

4 & 5. The same, sepals removed.

6. Anthers.
7. Ovary cut vertically.
8. A fruit branch.
9. Fruit cut vertically,
10. A seed.

Jarvis, del. Dunphy, Lith.

Dialium ovoideum, Thw.

BAUHINIA RACEMOSA. (Nat. order Leguminosæ.)

BAUHINIA. *Linn.*—GEN. CHAR. Sepals united at the base in a short or long disk-bearing tube, the free part spathaceous and subentire or separating into 5 or fewer valvate or induplicate lobes, petals 5 inserted at the summit of the tube usually clawed often more or less unequal, stamens 10 free or more or less monadelphous, either all perfect or some reduced to staminodia or altogether wanting, sometimes there is an inner verticil (prolongation of the torus) nearly entire or cut into short bristle-like threads, ovary stipitate the stipe free or adnate to one side of the calyx-tube, ovules several; style filiform or rarely wanting, stigma capitate or dilated, legume linear or oblong compressed, 2 valved, seeds compressed, albumen usually thin, radicle short and straight. Trees, woody climbers or shrubs, leaflets 2, generally united into a 2-lobed or nearly entire leaf with 5-11 digitate nerves or rarely distinct from the base, racemes terminal.—Piliostigma, *Hochstett.* Phanera, *Lour.* Symphyopoda, *DC.* Pauletia, *Cav.* Amaria, *Mutis in DC.* Casparia, *DC.* Lasiobema, *Miq. Fl. Ind. Bat.* i. *part* i. 71. Adenolobus, *Harvey.* Schnella, *Raddi.* Caulotretus, *DC.* Lacara, *Spreng.* Tylotia, *Vog.* Lysiphyllum, *Benth.* Perlebia, *Mart.*

BAUHINIA RACEMOSA. (Lam.) A small tree, bark dark scabrous, leaves cordate at the base, upper side glabrous, under shortly villous or glabrous, leaflets roundish or broadly obovate, united to or beyond the middle 3-nerved, racemes solitary terminal or leaf opposed, leafless much longer than the leaves; flowers scattered small whitish, calyx spathaceous at length reflexed 5 toothed at the apex pubescent, petals linear lanceolate ascending, slightly hairy on the outside, rather unequal, stamens 10 all fertile, monadelphous, unequal, filaments and anthers bearded with longish hairs, ovary glabrous long stalked, stalk free, style none, stigma flat sessile, legume linear straightish or curved woody thick scarcely dehiscing, many seeded. *Lam. Encycl. Meth.* i. *p.* 390;—*WA. Prod. p.* 295. B. parviflora, *Vahl.*;—*Roxb. Fl. Ind.* ii. 323. Piliostigma racemosa, *Hoch.*

This is generally a crooked very ramous tree; it is very common throughout this Presidency, and in Bombay, Bengal, Burmah and Ceylon, and ascends the mountains to about 3,000 feet; it is called Aree in Teligu, Archee in Tamil, Aupta in Bombay, Ban raj in Bengal, and Mylà in Ceylon; the wood is small, but the heart-wood is very hard and fine, a cubic foot weighs when seasoned 44 lbs. Matchlock-men almost always make their slow matches from its bark, which is boiled, dried, and beaten, and then burns well and slowly, without any substance being mixed with it; ropes are also made from the bark; the tree is said to be worshipped by the Hindoos during the Dussera in the Bombay presidency, and is sometimes called Wana rajah (King of the jungle). Elephants are very fond of the leaves and they are sometimes used for making native cigars.

Govindoo. del. Dumphy Lith:

Bauhinia racemosa, (Lam)

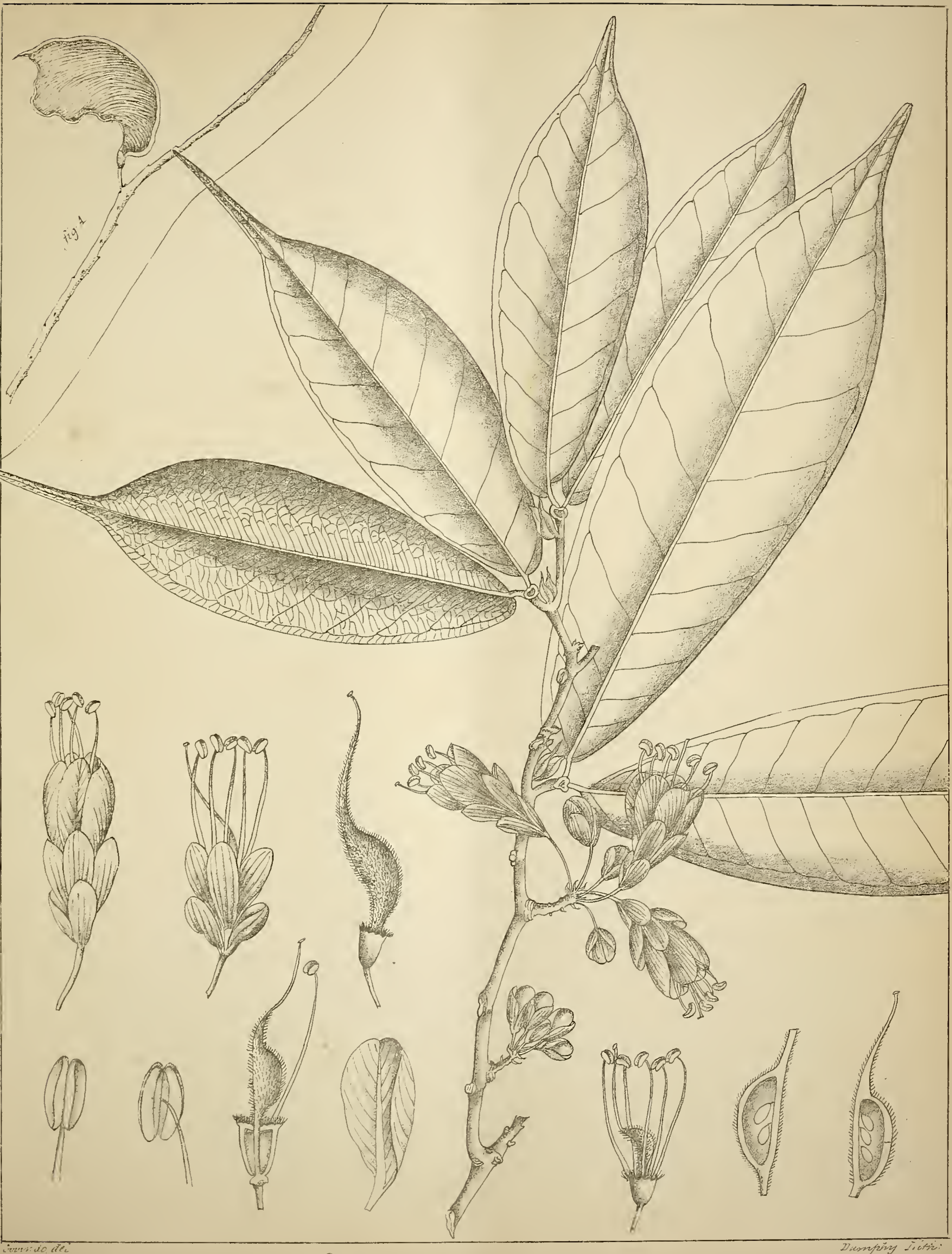
HUMBOLDTIA UNIJUGA. (Nat. order Leguminosæ.)

HUMBOLDTIA. *Vahl.*—GEN. CHAR. The disk-bearing tube of the calyx turbinate or narrow, segments 4 subequal colored imbricate, petals either 5 subequal sessile oblong imbricate, or 3 subequal, and 2 rudimentary or wanting, stamens 5 perfect with or without as many alternate teeth-like staminodes, or 10 perfect, filaments free inserted either at the base of the calyx tube or at the apex of the disk, exserted, anthers ovate or oblong versatile, cells dehiscing longitudinally, ovary stipitate, stipe adnate to the calyx tube, few ovuled, style filiform, stigma terminal clavato-capitate. Legumes oblong oblique or falcate compressed coriaceous 2-valved, seed transverse ovate compressed exarillate, albumen of cotyledons flat, radicle short straight, included. Large or middling sized trees unarmed, leaves abruptly pinnate, stipules foliaceous obliquely reniform or semisagittate, flowers racemose, bractes ovate or oblong, bracteoles colored enclosing the flower bud.—Batschia, *Vahl.* (not *Linn.*)

HUMBOLDTIA UNIJUGA. (Bedd.) A tree, young parts minutely strigose otherwise glabrous, leaves alternate abruptly pinnate, common petioles about 2 lines long, leaflets only one pair with a flat depressed gland at their insertion on the apex of the petioles, sub-sessile narrow-lanceolate very unequal at the base, and with a long acumination at the apex, 5-7 inches long 1¼ to 2 broad, stipule semi-ovate acuminate very unequal sided about ¼ inch long, flowers crimson on very short racemes from the trunk and older boughs and more rarely from the younger branchlets, peduncles ½ to 1 inch long, pedicels slender ½ to 1 inch long furnished with 2 oblong minutely pubescent bracteoles at the apex just below the calyx, calyx with a short tube 5 parted, segments oblong more than twice as long as the bracteoles minutely pubescent, corol 5 parted, one half longer than the calyx lobes, broad oblong, stamens 5 all fertile inserted alternate with the petals on to the hairy apex of the calyx tube, filaments glabrous except at their base, staminodia none, ovary stipitate hairy 2-3 ovuled, stipe adnate to the wall of the calyx tube, legume unknown. *Bedd. Icones tab.* 107.

This very handsome middling sized tree I have only found on the Travancore ghats in the dense forests a little below the Attraymallay, 3000-4000 *feet elevation, but most abundant in that locality ; it was in flower in January and is said to yield a very hard durable timber.*

Fig. A in the plate is the legume of H. Brunonis.



Govindo del. Dumphy Lith.

Humboldtia unijuga (Bedd.)

TAMARINDUS INDICUS. (Nat. order Leguminosæ.)

TAMARINDUS. *Linn.*—GEN. CHAR. Sepals 4, united at the base into a turbinate tube, the free portion or segments much imbricate. Petals 3, the lateral ones ovate, the upper inner one narrower, concave. Stamens incurved, united in a sheath to the middle, 3 or rarely 2 only perfect, with ovate anthers, 4 or 5 others reduced to short teeth. Ovary stipitate, with several ovules; style inflexed, rather thick, with a truncate stigma. Pod linear or oblong-linear, curved thick, but slightly compressed, the epicarp crustaceous and fragile, the mesocarp pulpy, the endocarp thick and fleshy, forming complete partitions between the seeds. Seeds broadly ovate, flattened; testa rather thick; albumen none, embryo straight, with a short radicle.—Trees. Leaves abruptly pinnate. Flowers in terminal racemes.

TAMARINDUS INDICUS. (Linn.) A very large tree, with a beautiful spreading head, leaves about 4-5 inches long by 1-1½ inches broad glabrous but pale or glaucous, leaflets 10-20 pairs oblong-linear obtuse unequal-sided at the base ½-¾ inch long by about 3 lines broad, petiolules generally hairy, stipules small deciduous, racemes short and loose, really terminal but usually in very short branchlets so as to appear lateral and shorter than the leaves, flowers cream colored or yellowish, blotched with crimson, about 1 inch in diameter, bracts very deciduous, calyx segments about 4 lines long, petals rather longer, pod about 1 inch broad varying in length according to the number of seeds ripened, usually 2 or 3. *DC.* ii. 488;—*Benth. Fl. Aust.* ii. *p.* 294. T. occidentalis, *Gœrtn.* T. officinalis, *Hook.*

This tree, the only species of the genus, is common both wild and cultivated throughout Tropical Asia and also in Africa and Australia, and cultivated in the West Indies, it is perhaps our finest tree for avenue and tope purposes, but its slow growth is somewhat against it; its fruit yields a considerable revenue in some districts, the heart wood is generally of small diameter, very hard close grained and sometimes beautifully veined of a dark-reddish color and hard to be worked, unseasoned it weighs 92-98 *lbs. the cubic foot, and when seasoned* 79 *lbs. and its specific gravity is* 1·264, *it is much used for turnery purposes and for pestles, oil presses, sugar crushers, carpenter's mallets and planes, croquet mallet heads and balls, and many other purposes, and is one of the best fuels for brick kilns as it burns whilst green; and is esteemed as excellent for gunpowder charcoal, the heart wood is only procurable from very old trees; the sap wood is of a dirty white color not durable and if not seasoned in water gets worm eaten. The leaves, fruit and seed are used medicinally by the natives, and a dye is prepared from the leaves, a paste made of the seeds reduced to fine powder and boiled with thin glue forms one of the strongest wood cements. The tree is called Amli in Hindustanee, Chinta in Telugu, Pooli in Tamil, Seyembalu in Ceylon, and Mà-gyi in Birmah, it attains a girth of* 25 *feet but has never any great length of trunk.*

Govindoo del.   Dunphy lith.

Tamarindus Indicus. Linn.

DICHROSTACHYS CINEREA. (Nat. order Leguminosæ.)

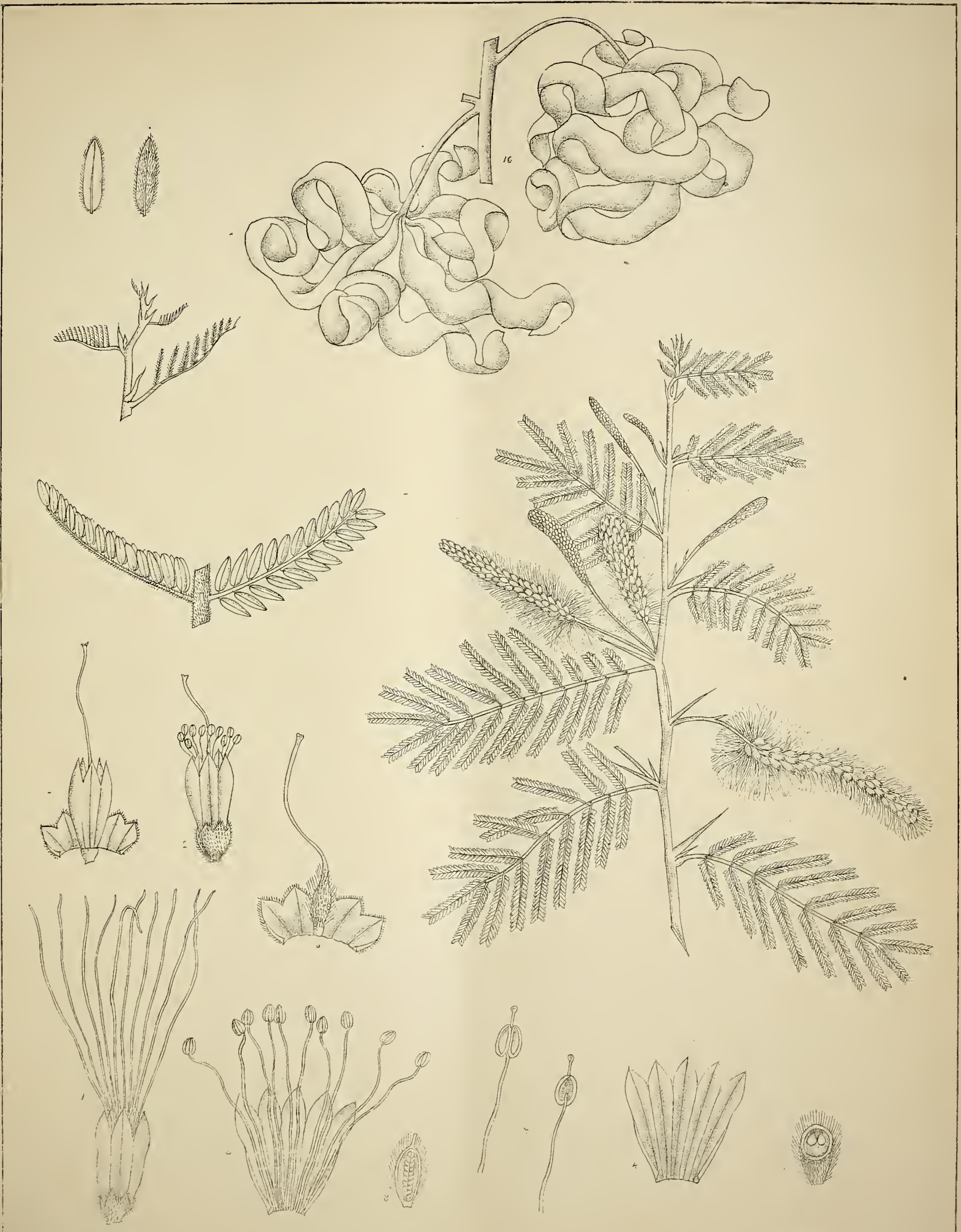
DICHROSTACHYS. *DC.*—GEN. CHAR. Calyx 5-toothed. Petals 5, valvate, usually cohering. Stamens in the perfect flowers 10, free; anthers ovate, tipped with a deciduous gland. Ovary nearly sessile, with several ovules; style short or filiform, with a small terminal stigma. Lower flowers of the spike neuter, with long, linear white or colored staminodia, and a small rudimentary ovary, pod linear compressed, variously twisted, indehiscent or the valves irregularly separating from the persistent sutures.—Small trees or rigid shrubs, the branchlets occasionally spinescent. Leaves abruptly bipinnate, with a stipitate gland between the pinnæ of the lowest or of all the pairs, leaflets small. Stipules subulate or acuminate, often imbricate on the short flowering branches. Flowers sessile, in dense cylindrical spikes, either terminal or apparently axillary by the shortness of the branchlet, the upper flowers of the spike hermaphrodite and yellow, the lower ones neuter and white pink or purple. *Benth. Fl. Aust. vol.* ii. *p.* 299. Cailliea, *Guill. et Perr.*

DICHROSTACHYS CINEREA. (WA.) A small tree or large shrub, spinescent, leaves 1-3 inches long with the petiole generally pubescent, pinnæ 8-12 pair ½ to 1 inch long, leaflets 12-20 pairs crowded oblong-linear slightly falcate 1 to 2 lines long ciliated and often hairy, spikes solitary or 2-3 together pedunculate 1-3 inches long, peduncle pubescent and generally with a bracteole about the middle, hermathrodite, flowers about 1 line long without the stamens which are twice or thrice as long, neuter flowers with very long staminodia, legume 2-3 inches long 3-4 lines wide, irregularly twisted viscid-pubescent or glabrous. *WA. Prod. p.* 271;—*Wight Icones tab*, 357. Mimosa cinerea, *Roxb. Fl. Ind.* ii. 561. Desmanthus cinereus, *Willd.* Acacia cinerea, *Spreng.*

A very common tree or shrub in dry arid soils in the plains and lower hills throughout the presidency, also in Bengal, Bombay, Ceylon, the Archipelago and N. Australia; it is called Vadatalla in Tamil, Velturu in Telugu, and Andara in Ceylon. The flowers are very showy, the upper half of the spike being yellow, the lower rose colored; the wood is very hard, tough and strong, but too small to be of much use, it makes good tent pegs.

Analysis.

1. A neuter flower shewing the long staminodia.
2. A fertile flower.
3. The same, calyx opened, stamens removed.
4. A corol opened.
5. Corol and the 10 free stamens.
6. Ovary and style.
7. Ovary cut transversely.
8. The same cut vertically.
9. Anthers shewing the glandular tips (which are deciduous) all much magnified.
10. Legumes.



Lamping lith

Dichrostachys cinerea. D.C.

XYLIA DOLABRIFORMIS. (Nat. order Leguminosæ.)

XYLIA. *Benth.*—GEN. CHAR. Flowers 5-merous sessile generally hermathrodite, calyx tubuloso-campanulate dentate, petals quite free to the base, slightly imbricate at the side in the centre. Stamens 10 alternately a little shorter, free, exserted, anthers oblongo-orbicular, gland-tipped at the apex (from the connective at the back) glands deciduous, pollen-grains numerous, ovary sessile many-ovuled, style filiform, stigma terminal small, legume sessile broadly falcate, flatly compressed thick woody 2-valved, partitioned between the seeds inside; seed transverse obovate compressed, funicle short fleshy. A large tree unarmed, leaves bipinnate, pinnæ 1-occasionally 2-pair, leaflets large few paired, glands between the pinnæ and leaflets, and on the petiole below the pinnæ, stipules small linear deciduous, capitula globose, peduncles axillary sub-fasciculate, or racemose at the apex of the branches, flowers small yellowish or cream colored. *Benth. in Hook Journ. Bot.* iv. 417.

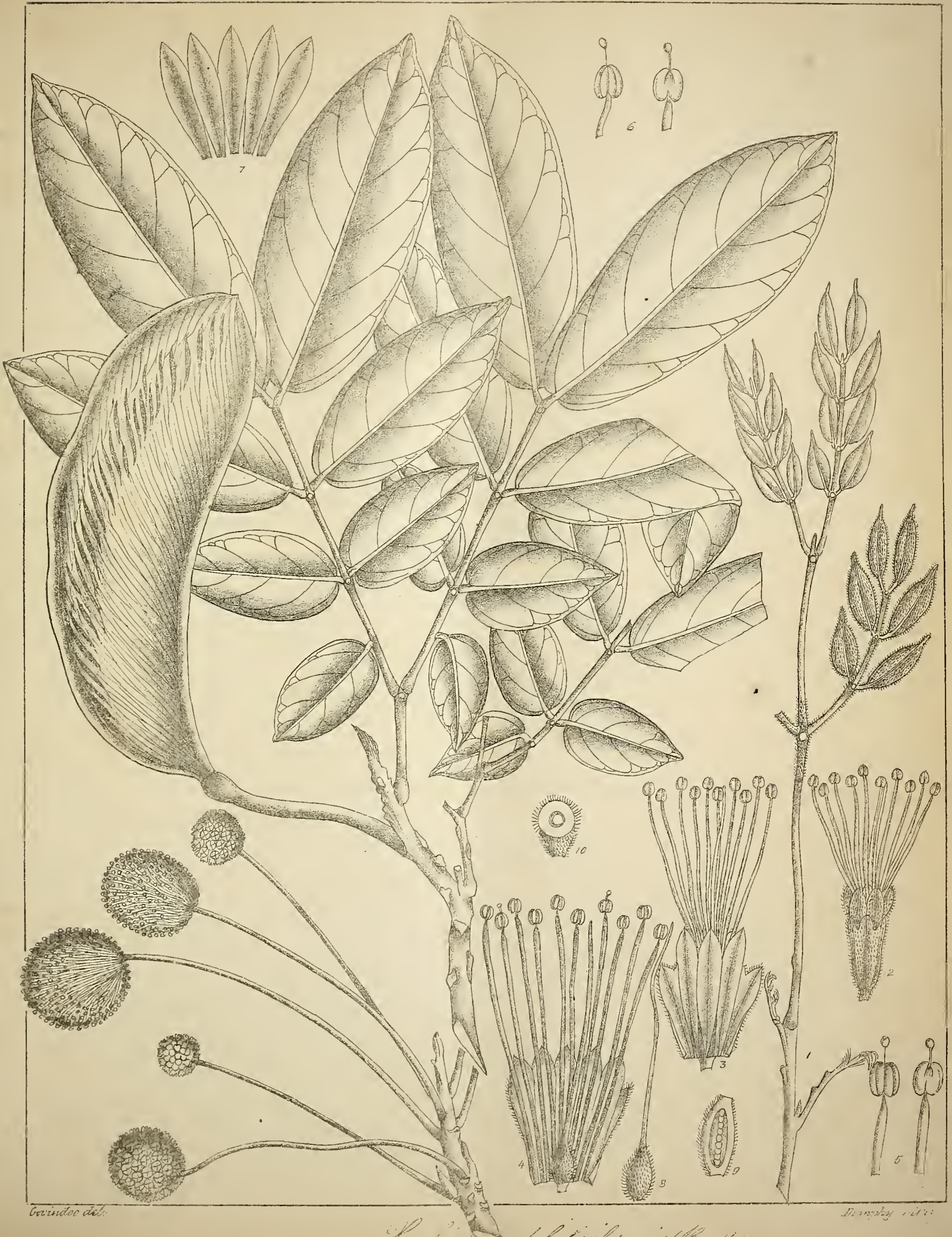
A genus consisting of a single species, the long stalked glands to the anthers are always present in the bud, they are soon deciducus but can be detected on some of the anthers in the full flower.

XYLIA DOLABRIFORMIS. (Benth.) A large tree, unarmed, leaves bipinnate, pinnæ generally only 1-rarely 2-pair, a gland on the petiole near the base and 1 between each pair of pinnæ, leaflets 2-6 (generally 3-4) pair with or without an odd one on the outside below the pairs, ovate-oblong acute with a gland on the petiole between each pair, the leaflets are gradually larger upwards, the terminal pair being sometimes 9-10 inches long, peduncles 3-4 inches long, capitula about 1 inch in diameter, legumes 4-6 inches long $1\frac{1}{2}$-$1\frac{3}{4}$ broad, valves very thick and woody.—Inga xylocarpa, *DC. Prod.* ii. *p.* 439. Mimosa xylocarpa, *Roxb. Fl. Ind.* ii. 543. Acacia xylocarpa, *Willd.*

This tree is widely distributed in the forests of the Madras Presidency, it is abundant and of large size in some parts of the Godavery forests, and on the lower western slopes of the mountains in South Canara, Malabar and Travancore; and in the forests at the foot of the South Canara and Malabar ghats it is often very gregarious forming forests of itself to the exclusion of almost all other trees, but it is seldom of fine growth when found in this state; it is generally known by its Tamil name of Irool, and is called Konda tangedu in Teligu (the Circars), Boja in the Godavery forests, and Tirwa in Canarese (S. Canara); it flowers in March and April when destitute of leaves, and ripens its seed in August and September, the wood is of a very dark red color fading to dark brown, heavy, hard, close grained, and not easily worked, when planed up the surface has an unctuous feel and not very agreeable smell. A cubic foot unseasoned weighs 68-74 *lbs. and* 58 *lbs. when seasoned and its specific gravity is* ·928, *it is excellent for posts, railway sleepers, naves of wheels, and all purposes demanding great strength, and is in use for building purposes. This tree is found in Birmah where it is called Pynkado and is known as the ironwood of Pegu and is said to last as long as teak, it is used there for knees in ship building, house and bridge posts, ploughs, boat anchors, the construction of carts, and other purposes.*

Analysis.

1. Apex of a young branch shewing a leaf with 2 pair of pinnæ.
2. A flower.
3. The same calyx cut open, shewing the free petals slightly imbricate at the sides.
4. Corol opened out.
5. Anthers, front and back view, shewing the stalked glaud arising from the connective at the back.
6. Anthers from a bud.
7. The petals.
8. Ovary and style.
9. Ovary cut vertically.
10. The same cut transversely.



Govindoo del. Dempsey lith.

Inga dolabriformis, Benth.

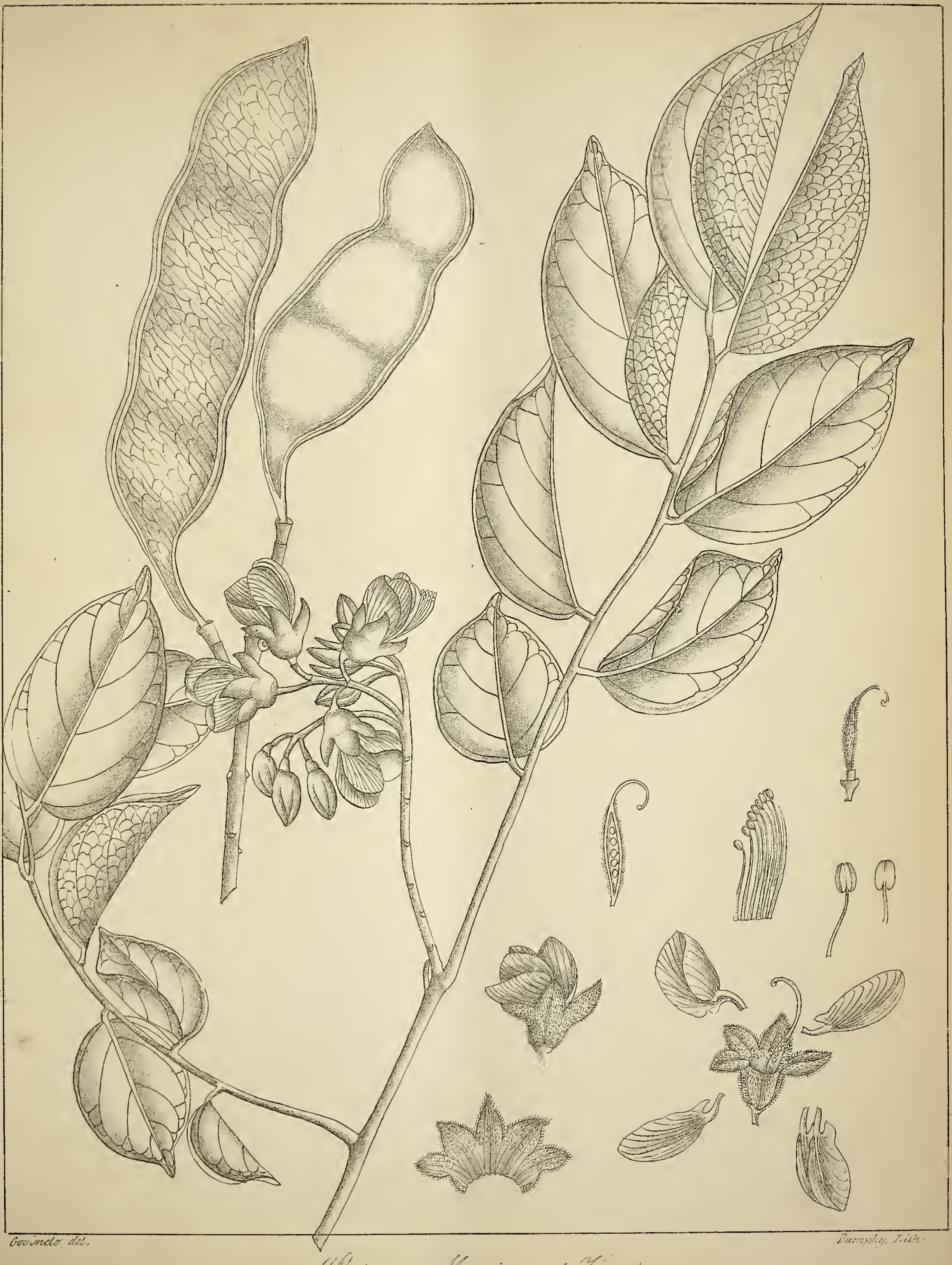
PERICOPSIS MOONIANA. (Nat. order Leguminosæ.)

PERICOPSIS. *Thw.*—GEN. CHAR. Lobes of the calyx subequal or the 2 superior a little smaller and subconnate, vexillum broadly orbicular reflexed, alæ falcato-obovate, keel incurved obtuse, petals free, stamens 10 free, anthers versatile, ovary stipitate many-ovuled, style subulate involute at the apex, stigma small, legume stipitate, broadly linear flatly compressed coriaceous indehiscent with the sutures with a thickened margin, seed much compressed broadly ovate or orbicular, cotyledons obliquely cordate at the base.

A tree with the habit of Ormosia, leaves unequally pinuate, leaflets alternate, flowers blackish-purple, panicles terminal.

PERICOPSIS MOONIANA. (Thw.) A very large tree, branches white-dotted, gemmœ pilose, leaves 8-14 inches long, the petiole and petiolules pilose when young, leaflets 5-8 glabrous ovate or oblong acuminate paler beneath minutely reticulate, 2½-7 inches long 1½-3 broad, stipules lanceolate pilose deciduous 2 lines long, panicles terminal, calyx 7 lines long, flowers 1 inch long, legumes 1-6 seeded smooth, obscurely reticulated, 1 inch broad thickened, margins 1 line broad. *Thw. En. Pl. Zey. p.* 413. Dalbergia Mooniana, *Thw. l. c. p.* 93.

This is a very valuable timber tree common about Colombo and the southern and central parts of Ceylon at no great elevation, the timber is used for building purposes and for furniture, and the tree is called Nadoong.



Govindo del. Dunphy lith.

Pericopsis Mooniana (Thw.)

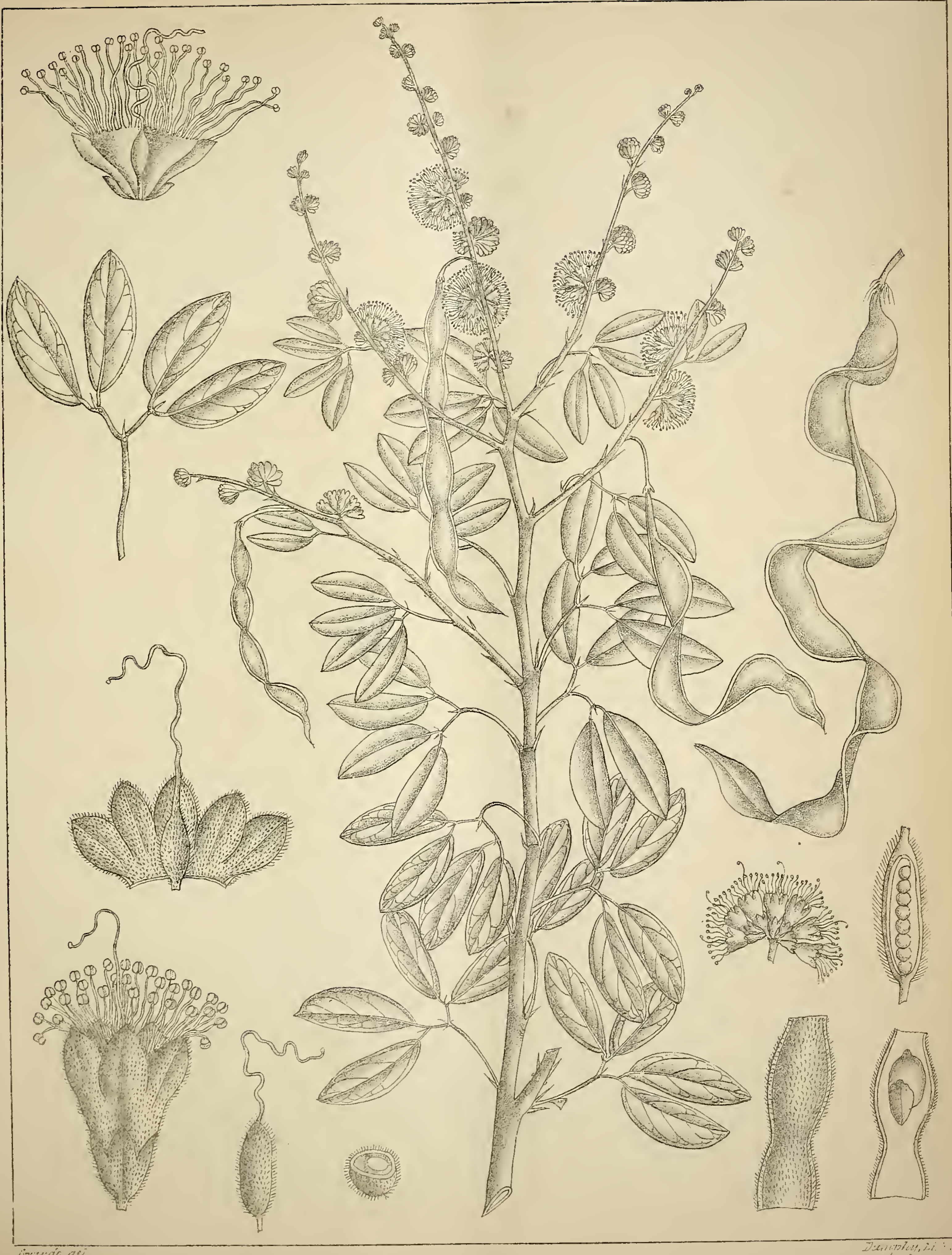
PITHECOLOBIUM DULCE. (Nat. order Leguminosæ.)

PITHECOLOBIUM. *Mart.*—GEN. CHAR. Calyx campanulate or tubular. Corolla 5-lobed, with a cylindrical tube. Stamens indefinite, usually numerous and long, united at the base in a tube enclosing the ovary. Pod flattened, usually rather thick and much curved, annular or spirally twisted, either opening entirely or on the outer edge in 2 valves, or quite indehiscent, very smooth and often coloured inside or with a thin pulp. Seeds ovate or orbicular; funicle filiform. Trees or rarely shrubs, unarmed or armed with short straight stipulary thorns. Leaves twice pinnate, usually with a gland on the petiole below the pinnæ, and others between or below some or all of the pinnæ and leaflets; leaflets few. Flowers in globular or oblong heads or umbels, or rarely in cylindrical spikes, usually hermaphrodite and white, the stamens rarely red. Cathormium, *Hassk.*

This genus only differs from Albizzia in its legume, from Acacia it is at once distinguished by the stamens being united in a tube. The American genus Inga differs from Pithecolobium only in its leaves being always simply pinnate.

PITHECOLOBIUM DULCE. (Willd.) A good sized tree up to 40 feet high and 6 feet in girth, extreme branches pendulous armed with short straight stipulary thorns, leaves bipinnate, pinnæ and leaflets each one pair, leaflets oblong very unequal sided obtuse with a gland between the pinnæ and between the pairs of leaflets, petiole shorter than the leaflets; flowers capitate, heads shortly pedunculate, racemose, the racemes panicled, legumes turgid twisted, seeds glabrous and smooth imbedded in a firm pulp.—Inga dulcis, *Willd;—WA. Prod. p.* 269. Mimosa dulcis, *Roxb. Fl. Ind.* ii. 556.

This tree is supposed to have been introduced from the Philippine Islands, but it is now most common throughout this Presidency; it is one of our best coppice fuels and is largely grown for that purpose and is also much used as a hedge plant. A cubic foot of unseasoned wood weighs 50·53 *lbs. and when seasoned* 40 *lbs., and its specific gravity is* ·640, *it is hard, coarse grained and brittle, of a reddish brown color, and when sawn emits an unpleasant odour; it is used for country carts, packing boxes, and the pannelling of doors. The tree is called Kàrkà-pilly in Tamil and is often called the Manilla tamarind by Europeans.*



Gouarde, del. Dunsplay, lit.

Pithecolobium dulce. (Willd)

PITHECOLOBIUM ANAMALLAYANUM. (Nat. order. Leguminosæ.)

For Gen. Char. see letter-press to Pl. clxxxviii.

PITHECOLOBIUM ANAMALLAYANUM. (Bedd.) A large spreading tree, branches panicles and petioles fusco-pubescent, young branches angled, leaves 4-9 inches long with 4-12 pair of pinnæ which are 3 to 4 inches in length, a large raised deeply concave gland is present on the petiole near its base on the upper side, and one smaller one in the centre of several of the interspaces between the insertion of the pairs of pinnæ (these latter generally occupy alternate interspaces), leaflets 10-22 pair subcoriaceous linear-oblong very oblique at the base and apex, glabrous above except on the margin, costa beneath furnished with longish hairs otherwise glabrous, panicles subcorymbiform terminal and several together in the upper axils, capitula many flowered, calyx and corol aureo-pubescent on the outside, the latter 3-4 times as long as the former, ovary on a long stipe pubescent.

This very beautiful tree with its large spreading head is very conspicuous in the moist woods on the higher ranges of the Anamallays (5000-8000 *feet,) and other hills to the south of them, but I never observed it on the Nilgiris or anywhere north of the Palghat gap; except in its much more numerous pinnæ, it is closely allied to P. subcoriaceum (Thw.), and I was inclined to refer it to that species, but Dr. Thwaites (to whom I have forwarded specimens) thinks it very distinct.*

Dunphy Lith.

Pithecolobium Anamallayanum (Bedd.)

CRUDIA ZEYLANICA. (Nat. order Leguminosæ.)

CRUDIA, *Schreb.*—GEN. CHAR. Calyx tube short, segments 4 membranaceous imbricate reflexed when in flower, petals none, stamens 10 or rarely fewer free, filaments filiform, anthers ovate or oblong, cells dehiscing longitudinally, ovary shortly stipitate, stipe free at the bottom of the calyx or obliquely affixed to one side of the tube, few ovuled, style filiform short or elongate, stigma terminal small, legume obliquely orbicular, ovate or broadly oblong, flatly compressed, rigidly coriaceous 2-valved, margins often thickened, seed 1-2 large orbicular or subreniform, flatly compressed emarginate at the side near the hilum, albumen none, cotyledons flat, radicle short straight included. Unarmed trees, leaves unequally pinnate, leaflets alternate coriaceous or membranaceous, stipules small and very caducous, or foliaceous and persistent, flowers small racemose.—Crudia, *DC.* Pryonia, *Miq. Fl. Ind. Bot.* i. *part* 1. Apalatoa, *Aubl*—? Tonchiroa, *Aubl.*

CRUDIA ZEYLANICA. (Thw.) A large tree, glabrous, leaflets 2-6 ovate or oblong obtusely acuminate, slightly oblique at the base rounded, paler beneath, very minutely reticulated 2-6 inches long, racemes terminal many flowered sparingly pilose, from shorter to nearly as long as the leaves, pedicels 2 lines long, minutely bibracteolate at the middle, flowers crowded, sepals 2 lines long rounded persistent, filaments alternately shorter ; anthers rotundate, ovary stipitate, palely fusco-tomentose, 3-4 ovuled, style filiform glabrous, stigma small, legume (immature) oblong slightly falcate.—Detarium Zeylanicum, *Thw. En. Pl. Zeyl. p.* 414.

This large tree has only been found in Ceylon (Galpaata near Caltura) ; my specimens are only in bud, and I have not been able to procure full grown flowers for analysis.

Govinao. del: Dumphy. Lith:

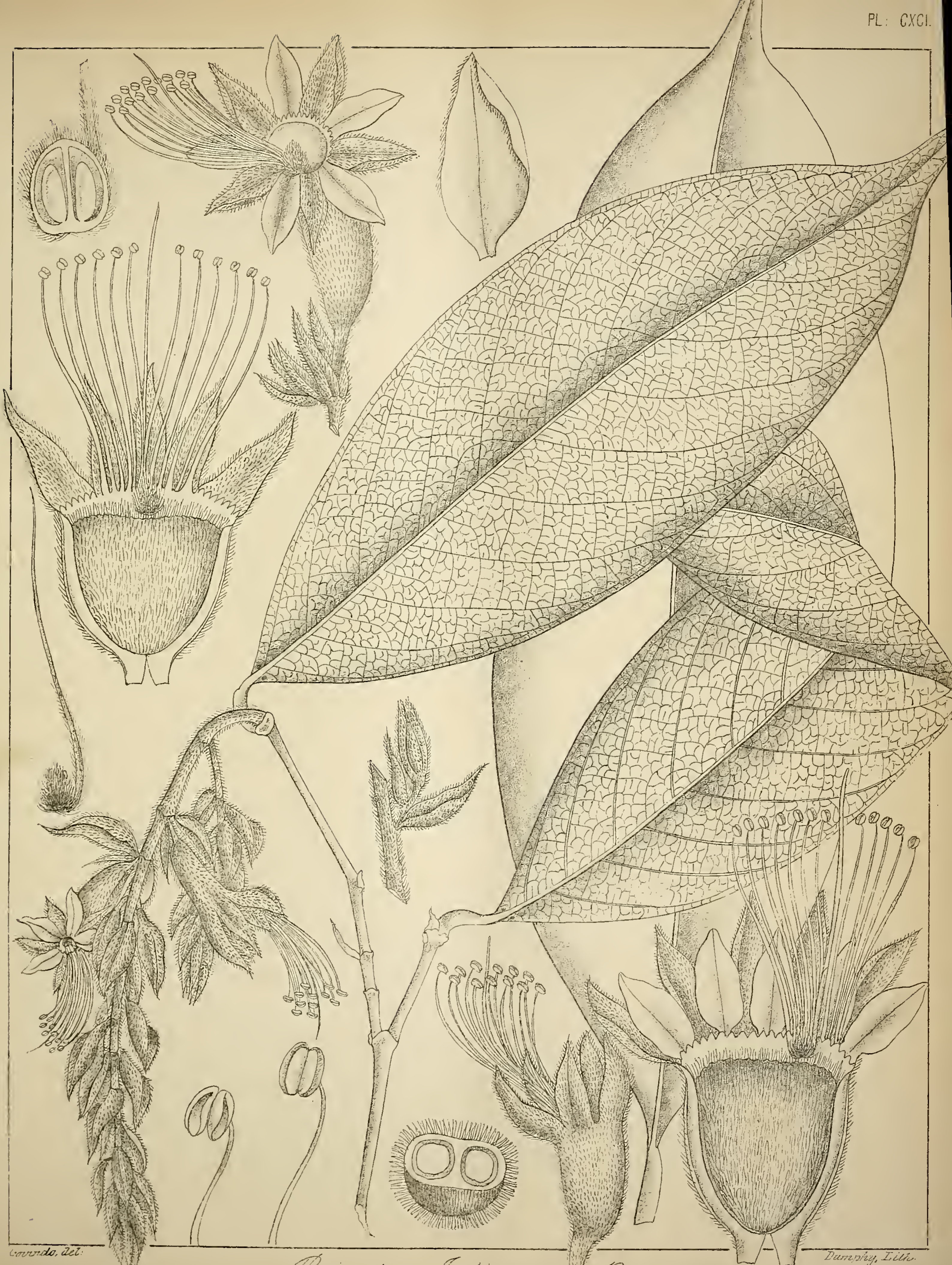
Crudia Zeylanica (Thw.)

PARINARIUM INDICUM. (Nat. order Rosaceæ.)

PARINARIUM. *Juss.*—GEN. CHAR. Calyx-lobes 5, imbricate. Petals 5, rarely 4. Stamens numerous or rarely few, all perfect or those on one side reduced to small staminodia, filaments filiform ; anthers small. Ovary of a single carpel, adnate on one side to the mouth of the calyx-tube and protruding from it, more or less completely 2-celled, with 1 erect ovule in each cell ; style from the base of the ovary. Drupe ovoid or spherical, the endocarp bony. Seeds 1 or 2, erect.—Trees. Leaves alternate, coriaceous, entire. Stipules deciduous, usually small. Flowers white or pink, in cymes forming terminal raceme-like or corymbose panicles. *Benth. Fl. Aust*, ii. *p.* 426. Petrocarya, *Jack.* Grymania, *Presl.* Maranthes, *Blume.* Exitelia, *Blume.* Lepidocarya, *Korth.* Balantium, *Desv.* Entosiphon, *Bedd.*

PARINARIUM INDICUM. (Bedd.) A middling sized tree, glabrous except the inflorescence, leaves alternate elliptic to lanceolate entire glabrous, slightly undulate, 8-9 inches long by 3 broad, with 2 glands at the base on the under side close above the petiole, petiole $\frac{1}{4}$ to $\frac{1}{2}$ inch, racemes slightly pubescent, shorter than the leaves, leaf opposed or terminal, flowers white subsessile 3 bracteated, outer bract large ovato-lanceolate 2 inner ones linear-lanceolate, calyx tube infundibuliform, divisions 5 imbricate lanceolate acuminate subequal pilose, petals 5 inserted into the jaws of the calyx, between its divisions and the stamen tube, and alternate with the former, ovate pointed imbricate equal, a little shorter than the calycine lobes, stamen-tube lining the inside of the calyx and connate with it to its base densely hairy inside, stamens 12-15 all together on one side of the tube near the ovary, filaments glabrous, twice the length of the calyx induplicate in æstivation, anthers 2-celled bursting longitudinally, the rest of the stamen tube is furnished with teeth-like staminodia along its margin, ovary connate with the tube near the summit, very hairy 2-celled, cells 1-ovuled, ovules erect, style lateral or almost basal, glabrous except at the base, longer than the stamens. *Bedd. Ic. p.* 22, *and tab.* cix. Entosiphon, *Bedd. in Mad. Lit. Journ.*

I have only found this tree on the Wynad slopes (Malabar), Carcoor ghat and its vicinity 2000-3000 *feet elevation, nothing is known of its timber or uses.*



Covvrdo, del. Dumphy, Lith.

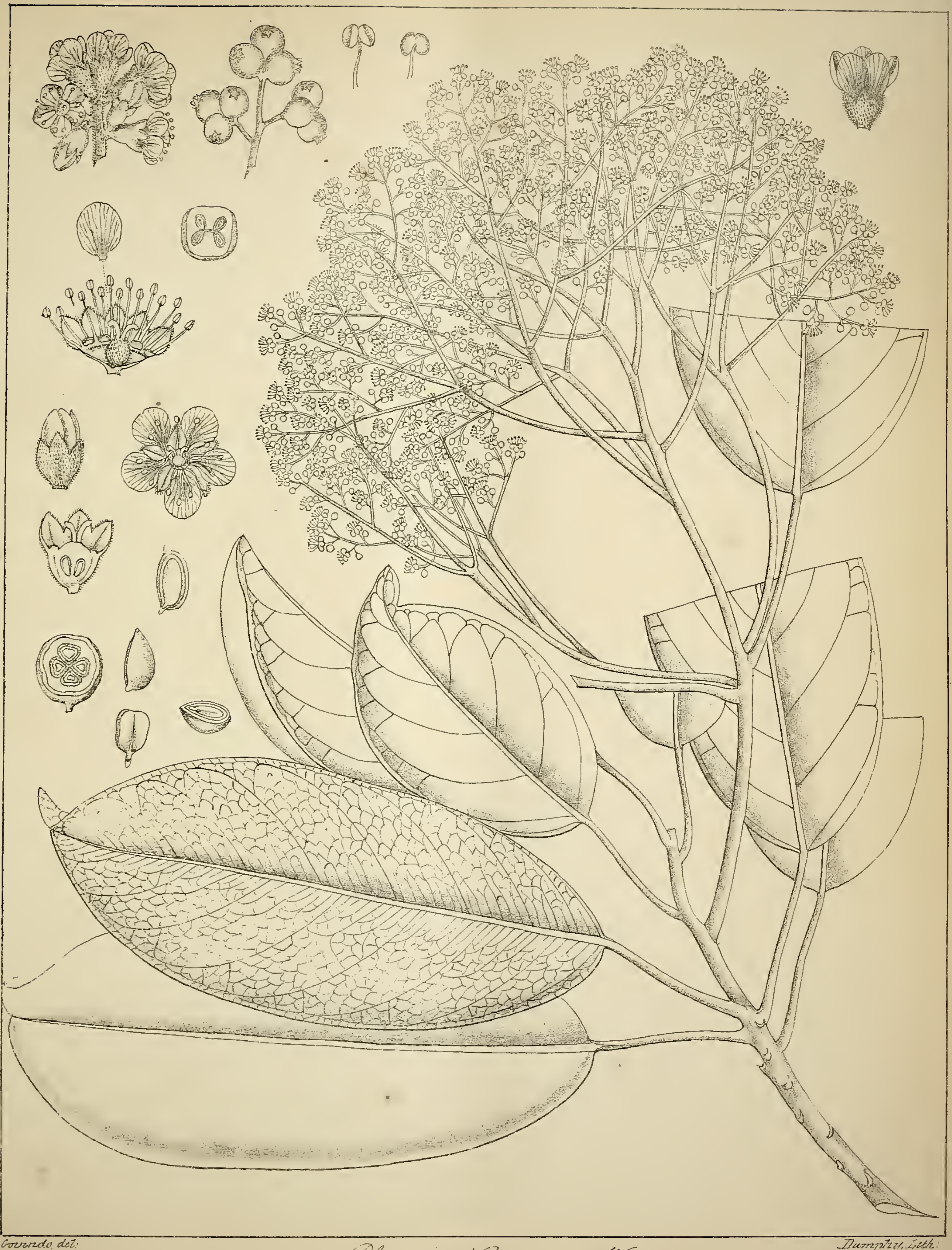
Parinarium Indicum. (Bedd:)

PHOTINIA NOTONIANA. (Nat. order Rosaceæ.)

PHOTINIA. *Lindley.*—GEN. CHAR. Calyx-tube campanulate or turbinate, adhering to the ovary, the limb short persistent 5-toothed, petals 5 spreading, stamens about 20 inserted into the jaws of the calyx, filaments subulate, ovary inferior or the apex free, 2-5 (rarely 1) celled with 2 erect ovules in each cell, styles 2-5 (rarely 1) free or more or less connate at the base their apices dilated truncate and stigmatic, fruit succulent crowned with the remains of the calyx teeth, endocarps thin usually 1 celled with 2 rather small oblong seeds, seeds erect, testa membranaceous or coriaceous, cotyledons plano-convex. Trees or shrubs unarmed glabrous or pubescent, leaves simple coriaceous evergreen, serrated or entire, stipules sometimes subfoliaceous, flowers small white or terminal corymbs or panicles, fruit sometimes edible.—Eriobotrya, *Lindl.*

PHOTINIA NOTONIANA. (Wall.) A large tree, leaves glabrous from cuneate-lanceolate to oblong acute, quite entire or with a few scattered inconspicuous teeth, 4-6 inches long by 2-2¾ broad, petioles about 1¼ inches long, panicles corymbose large very compound, puberulous, pedicels shorter than the calyx, cells of the ovary spuriously semi-bilocular, fruit glabrous 2 seeded. *WA. Prod. p.* 302 ;—*Wight Icones tab.* 991 ;—*Wight Ill. tab.* 85.

A very handsome tree, very common at the higher elevations on the Nilgiris, Anamallays, Pulnies and on the Ceylon mountains, it flowers in March and April and its fruit ripens in June and July, the latter in taste and flavor resembles that of the mountain ash. The tree is called Kaddi bikki by the Burghers on the Nilgiris, the timber is adapted for cabinet purposes, it is closely allied to, if distinct from, P. integrifolia, Lindley.



Govindo del.

Dumphy Lith.

Photinia Notoniana (Wall.)

CARALLIA INTEGERRIMA. (Nat. order Rhizophoraceæ.)

CARALLIA, *Roxb.*—GEN. CHAR. Calyx minutely bracteolate at the base, tube semi-adnate to the ovary, campanulate above with 5-8 short valvate lobes, petals as many as the lobes of the calyx clawed orbicular, jagged, 2-fid, slightly toothed, or entire, inserted at the margin of the thin stamen tube which lines the calyx tube nearly up to its lobes, disk epigynous 10-16 lobed, stamens twice as many as the petals and inserted with them on the stamen tube at the base of the calyx-lobes, the lower portion of the filaments adherent down to base of the free portion of the tube, anthers small oblong, ovary semi-inferior 3-5 celled, with 2 ovules in each cell, pendulous from the axis above the middle, style subulate or filiform, stigma 3-5 lobed. Fruit small globose coriaceous, generally 1-celled, 1-seeded, seed globosely reniform, testa fibrous, albumen fleshy, embryo curved not growing before the seed falls. Trees or shrubs very glabrous, branchlete 4-angled or terete, leaves opposite petiolate, ovate or elliptic, very glabrous shining entire or serrulate stipules interpetiolar (as in Rubiaceæ) caducous, flowers small in axillary pedunculate usually trichotomous cymes.—Petalotoma, *DC. Prod.* iii. *p.* 294. Diatoma, *Lour Fl. Coch.* 296. Symmetria, *Bl. Bijd.* 1130. Barraldeia, *Thouars, Gen. Nov. Madag.* 24.

CARALLIA INTEGERRIMA. (DC.) A tree, glabrous in all its parts, leaves petiolate entire obovate-oblong or elliptic obtuse or more or less acuminate, coriaceous, deep green and shining above, paler beneath, 3-5 inches long by about 2 broad, petioles 2-3 lines long, cymes axillary or from the old leafless nodes often furnished with much gummy substance, on short peduncles, each short branchlet bearing 3-5 sessile flowers, calyx short broad campanulate not 3 lines in diameter, 8-toothed, petals white clawed orbicular much lobed and jagged, stamens 16 as in the generic character on filaments nearly equal in length, but the 8 opposite the sinuses are less recurved and appear much longer from being more exserted, ovary 3-4 rarely 5-celled, styles 3-4 rarely 5, fruit globular about 3 lines in diameter crowned by the calyx-teeth.—*DC. Prod.* iii. 33. C. Ceylanica, *Arnt. Wight Ill. tab.* 90. C. corymbosa and Sinensis, *Arnt. in Tayl. Ann. Nat. Hist. Vol.* i. *p.* 371. C. Timorensis, *Bl. Mus. Bot. Vol.* i. *p.* 128. C. octopetala, *F. Muller.* Pootia cereopsifolia, *Mig. Pl. Hochst.*

A very common tree in our Western ghat forests up to 4000 feet from Bombay down to Cape Comorin, also on the Cuddapah hills, most abundant in S. Canara (where it is called in Canarese 'Andi punar) and in Coorg ; in Bombay it is called Punschi, and in Ceylon, where it is met with up to 3000 feet, it is called Dawata, it is a highly ornamental tree on account of its beautiful foliage ; it is also indigenous in Bengal, Birmah, Hongkong and tropical Australia. The timber is ornamental and of a reddish color, and is used in S. Canara for furniture and cabinet purposes, and in Ceylon for furniture and fittings, it is tough and not easily worked, brittle and not durable, and has a pretty wavy appearance, and is peculiar in structure, having a great deal of cellular tissue ; a cubic foot unseasoned weighs about 56-60 lbs. and 44 lbs. when seasoned, and its specific gravity is ·684 ; in Birmah where the tree is known by the name of Manioga, it is used for planks and rice pounders. In Calcuta it is in use for house building under the name of Kierpa (Bengalee.)

Analysis.

1. A flower, the petals fallen off, showing the valvate calyx.
2. The same open, showing the stamen tube lining the calyx to the base of its lobes, the 16 stamens inserted on it, and 1 of the petals (the other 7 removed).
3. A petal.
4. A flower (5 lobes of the calyx and the petals removed), showing that the calyx-tube is adnate to the ovary in nearly its whole length.
5. Anthers, front and back view.
6. Ovary with its 16 lobed epigynous disk, style, and a 4-cleft stigma.
7. Ovary cut vertically, showing the pendulous ovules and a 3-lobed stigma.
8. A 4-celled ovary (it is sometimes 3 or 5 celled) cut transversely, showing the cells 2-ovuled.
9. Fruit.

Govindo, del: Dumphy Lith:

Carallia integerrima, D.C.

WEIHEA ZEYLANICA. (Nat. order Rhizophoraceæ.)

WEIHEA, *Spreng.*—GEN. CHAR. 2 bracteoles connate into a cup, enclosing the flower bud, more distant when the flower expands. Calyx tube very shortly turbinate adnate to the base of the ovary, limb 4-5 parted, the segments valvate at length spreading or reflexed, petals 4-6 inserted under the margin of the obscure disk, unguiculate spathulate fimbriately lacerated; stamens 10-30 inserted on the disk, filaments filiform, anthers oblong, ovary superior adnate to the base of the calyx ovoid-globose 3-5 sulcate or lobed 2-4-celled, style filiform, stigma 2-4-lobed, ovules 2 in each cell collateral pendulous, fruit globose fleshy 3-4 celled, tardily septicidally 3-4-valvate, valves thick, cells 1-2 seeded. Seed arillate ovoid compressed and subtrigonal, testa coriaceous, albumen fleshy, embryo straight, cotyledons plane elliptic venose, radicle terete. Trees or shrubs, leaves glabrous opposite, petiolate, entire or obtusely serrate penniveined, stipules interpetiolar (as in Rubiaceæ) deciduous, peduncles axillary solitary or fascicled 1-flowered, —Anstrutheria, *Gard. in Calc. Journ. Nat. Hist.* vi. 344, *t.* 4. Richiæa, *Thouars Gen. Nov. Madag.* 25.

WEIHAE ZEYLANICA, (Gardn.) A small tree, leaves olong to elliptic more or less rounded at the base or gradually attenuated, gradually or rather suddenly produced into an acute or. obtuse point at the apex, veins penniveined and looped, glabrous, submembranceous 2-5 inches long, by $\frac{3}{4}$-2 inches broad, petioles glabrous or slightly hairy 2-3 lines long, stipules oblong hairy caducous, peduncles solitary or 2 in the axils, about as long as the petioles, bracteoles ciliate, flowers about $\frac{3}{4}$ inch long, 5-merous, calyx segments reflexed hairy on the outside and ciliate, glabrous within, stamens about 25, anthers subbasifixed, petals a little longer thau the calyx, lobes lacerated into about 10 fimbriations, ovary and the 3-lobed style hairy.—Anstrutheria Zeylanica, *Gardn. in Calc. Journ. of Nat. His. vol.* vi. *p.* 344. *t.* 4.

A small tree not uncommon on the South Tinnevelly and Travancore mountains at no great elevation, also in Ceylon (Galle and Trincomalee), in flower in September.

Govindo del.

Dunphy Lith.

Weihea Zeylanica, (Gard.

ANISOPHYLLEA ZEYLANICA. (Nat. order Rhizophoraceæ.)

ANISOPHYLLEA. *Brown.*—GEN. CHAR. Calyx tube ovoid or oblong, adnate to the ovary, terete or costate, limb 4-parted, lobes erect, petals 4, involute, entire 2-lobed or lacerate; stamens 8 inserted with the petals, filaments short subulate, anthers small didymous ovary inferior 4 celled, styles 4, subulate erect or recurved, apex acute or subcapitate stigmatose, ovules solitary in the cells, pendulous. Fruit coriaceous, oblong costate 1-seeded, seed pendulous, testa coriaceous, embryo exalbuminous clavate axial, cotyledons very minute or obsolete. Trees or shrubs, glabrous, or the young parts sericeous, leaves distichously alternate, petiolate, the alternate ones smaller or minute and stipuliform, obliquely ovoid or lanceolate 3-5-nerved entire exstipulate, flowers in simple axillary spikes, small or minute ebracteolate or minutely bracteolate.—Tetracrypta, *Gardn.*

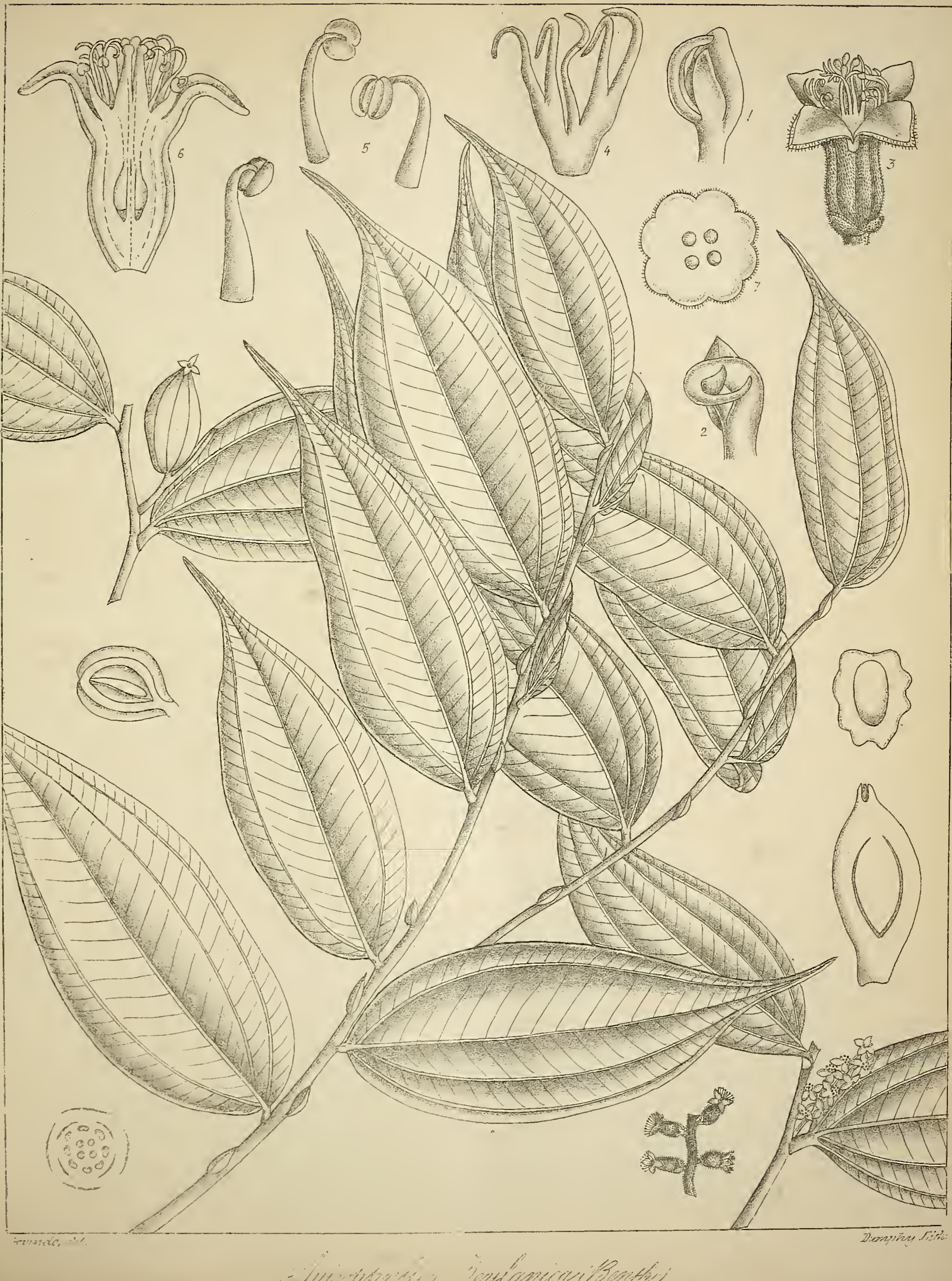
ANISOPHYLLEA ZEYLANICA. (Benth.) A tree, young parts minutely puberulous, leaves obliquely ovoid to lanceolate rounded or attenuate at the base tapering into a long acumination at the apex, very hard and coriaceous, glabrous except the primary veins which are minutely puberulous beneath and occasionally slightly so above, 4-5 inches long by 1½-2 broad, 3-5 nerved 3-4 of which are very prominent and raised beneath; the alternate stipuliform leaves very minute, petioles 3 lines long, minutely puberulous racemes about ¾ inch long puberulous bracteolate, calyx about 2 lines long puberulous on the outside, lobes persistent, fruit oblong attenuated at the apex, costate, indehiscent. *Benth. in Flora. Niger.* Tetracrypta cinnamonoides, *Gard. and Champ. in Hook. Journ. of Bot.* 1. *p.* 314 *and* v. *p.* 378. *t.* 5.

A tree, found in the southern and central parts of Ceylon up to an elevation of 1500 *feet, called Wellapeyenna; the structure and germination of the seed are the same as in Barringtonia and Careya, the minute stipuliform leaves represented in the figure are absent in my dried specimens, so I presume they are deciduous. The wood is used for building purposes. I am indebted to Dr. Thwaites for the drawing.*

Analysis.

1-2. Apex of growing branch.
3. A full flower.
4. A petal.
5. Anthers.
6. A flower cut vertically, showing the solitary pendulous ovules.
7. Ovary cut transversely, showing the 4 cells.

PL: CXCV



de Alwis, del. Dunphy lith.

Anisophyllea Zeylanica (Benth.)

GYROCARPUS JACQUINI. (Nat. order Combretaceæ.)

GYROCARPUS. *Jacq.*—GEN. CHAR. Calyx tube adnate to the ovary, or none in male flowers, limb 4 to 7 cleft. Petals none. Stamens 4 to 6, alternating with as many club shaped staminodia, or fewer or none in the female flowers. Ovary inferior, with 1 pendulous ovule and a sessile stigma, abortive in the male flowers. Drupe dry, crowned by 2 much elongated, erect, spathulate, wing like calyx lobes. Seed oblong, pendulous, without albumen, cotyledons petiolate, convolute round the radicle. A tree. Leaves alternate, broad, entire or lobed. Flowers polygamous, very small, crowded in dense corymbose cymes.

A genus consisting of a single species, a tree widely distributed in the tropical regions of Asia, Central America and Australia, it is of anomalous structure and has been associated by many botanists with Laurineæ chiefly on account of its anthers opening by 2 valves. Prof. Lindley first placed it in this order, with which its fruit and seed quite agree.

GYROCARPUS JACQUINI. (Roxb.) A tree often of large size. Leaves deciduous, crowded at the ends of the thick branchlets, broadly ovate or orbicular, on young trees often 8 to 10 inches long and broad and deeply 3 lobed, on older trees usually smaller and entire or broadly and shortly lobed, usually more or less acuminate, truncate or cordate at the base, glabrous or tomentose underneath or on both sides, the petioles varying from 1 to 4 inches. Peduncles in the upper axils or close above the last leaves, rarely exceeding the petioles, bearing each a repeatedly branched cyme with densely crowded exceedingly small flowers forming little globular heads before expanding, sometimes entirely males, sometimes with a few hermaphrodite or female flowers scattered in the cyme or chiefly in the forks. Drupes ovoid, usually about $\frac{3}{4}$ inch long, the wings erect, oblanceolate, rounded at the end, much narrowed below the middle, from under 2 inches long and about $\frac{1}{2}$ inch broad to $2\frac{1}{2}$ inches long and about 5 lines broad. *Pers. Syn.* i. 143. G. Americanus, *Jacq. Meissn. in DC. Prod.* xv. 247. G. Asiaticus, *Willd.*;—*Meissn. l. c.* 248. G. acuminatus, *Meissn. l. c.* G. sphenopterus, *R. Br. Endl. Iconogr. t.* 43;—*Meissn. l. c.* G. rugosus, *R. Br. Meissn. l. c.*;—*Benth. Fl. Aust.* 11, *p.* 505.

This tree is common throughout the plains in India and Ceylon, and is widely distributed in tropical regions throughout the world; it is called Tanaku and Kumar pulki in Teligu, and Zaitun in Hindustanii, the wood is very light, soft, and white, and is much used at Condapilly in the Northern Circars for making light cavadie boxes and toys, and it takes paint and varnish well, it is also preferred before all other woods for making catamarans; necklaces and rosaries are made from the seed. The plate only represents male flowers and a fruit, as I unfortunately have no fertile flowers at hand.

Analysis.

1. A male flower, showing the imbricate calyx and the 6 exserted stamens.
2. The same open, showing the 6 stamens alternate with 6 spathulate staminodes.
3. A staminode.
4. An anther, front and side view, showing that it opens by a valve (as in Lauraceæ.)
5. A fruit, showing its 2 long wings (enlarged lobes of the calyx.)

Govindo. del.

Dunphy. Lith:

Gyrocarpus Jacquini. (Roxb.)

EUGENIA JAMBOLANA. (Nat. order Myrtaceæ.)

For Gen. Char. see the Order in the Manual.

EUGENIA JAMBOLANA. (Lam.) A very large tree, quite glabrous, leaves oval oblong obtuse or shortly acuminate, usually 4-6 inches long by 2-3 inches broad but sometimes larger, very firm shining with numerous fine pinnate veins, and reticulated between them, the principal ones confluent into a faint or more or less prominent marginal vein, panicles large broad, trichotomous numerous, lateral on the old wood below the leaves, the ultimate cymes loose, flowers rather small very sweet scented, calyx sessile turbinate campanulate, lobes short and inconspicuous often obsolete, petals cohering in a transparent cup-shaped calyptra and falling off in that state as the anthers unroll, fruit oblong to roundish deep-purple, from the size of a pea to that of a pigeon's egg usually with a single seed. *Lam. Dict.* iii. 198 ;—*Roxb. Fl. Ind.* ii. *p.* 484 ;—*Wight's Icones tab.* 535, and E. fruticosa, *tab.* 624. Syzygium jambolanum, *DC.* iii. 259. E. Moorei, *F. Muell. Fragm.* v. 33. E. caryophyllifolia, *Lam.* ;—*Wight Icones* 553.

This large and beautiful tree is the commonest of the Syzygium section of Eugenia, it is found almost everywhere throughout the plains of India, whereas most of the other species affect the mountains ; it is much planted in topes and avenues in this Presidency, and it ascends the mountains to 4000 *or rarely* 5000 *feet elevation ; it is also indigenous in the Archipelago and in Australia ; the bark is strongly astringent and dyes excellent durable browns, and it yields an extract like the gum kino. The fruit is universally eaten, and that from some of the larger fruiting varieties (when it is as large as a cherry or much larger) is very agreeable, the fruit of the very small fruiting variety (E. caryophyllifolia, Lam.) is not eaten, and is not larger than a pea.*

This tree is called Jàman in Hindoostanee, Nawal and Nawar in Tamil, Narala in Canarese, Nareyr in Teligu, Jambool in the Bombay Presidency, and Madang in Ceylon ; the panicles of flowers are always produced from the old wood just below the shoots of new wood, and if this is borne in mind it cannot be confounded with any of the other species except E. nervosa, which has much more prominent venation ; it generally flowers in March and April and the flowers have a strong smell of honey ; the wood is much used in native house building, for cart framing, agricultural implements and a variety of purposes, it resists the action of water very well, and is used for well work, it is tolerably close and even grained, not very strong or durable except in water, and in color dirty brown (reddish when fresh), a cubic foot unseasoned weighs 60-62 *lbs. and when seasoned* 48 *lbs. and its specific gravity is* ·768.

Analysis.

1. A flower bud.
2. The same more advanced, the petals lifted up like a calyptra by the 1st expanding anther.
3. Full flower, the calyptra (petals) still adhering (though generally deciduous before this stage).
4. Anthers, front and back view.
5. Flower cut through vertically, showing the insertion of the stamens at the apex of the calyx tube, and the longitudinal section of the ovary.
6. Cross section of the ovary, showing 2 cells.
7. A fruit. (All drawn from fresh specimens). This species well illustrates the Syzygium section of this genus (allied species of which are so characteristic of our higher mountain woods) : the petals generally fall off in a lid though they occasionally in some species expand more or less ; the flowers are always small and insignificant, and the trees are always perfectly glabrous.

[illegible] del   G Dumphy Lith:

Eugenia Jambolana, (Lam:)

EUGENIA ALTERNIFOLIA. (Nat. ord. Myrtaceæ.)

For Gen. Char. see this Order in the Manual.

EUGENIA ALTERNIFOLIA. (Wight.) A large tree, glabrous in all its parts, leaves alternate or occasionally sub-opposite never opposite, very minutely and inconspicuously dotted, very thickly coriaceous, from ovate to almost orbicular, quite rounded at the apex or with a rather sudden blunt acumination, 3-9 inches long of which the petiole is 1 inch or a little more, dark green and shining above much paler beneath, primary veins very numerous obliquely parallel prominent and joined into a very regular continuous vein close to the margin, cymes panicled rising from the old axils of the fallen leaves or congested near the base of the new wood, divisions with 3-10 umbellate flowers at the apex and there furnished with numerous triangular apiculate bracteoles, flowers small yellowish white very sweet scented, calyx viscid and shining truncated and entire or with 4 very minute teeth, petals combined in a transparent calyptra which is thrust off by the anthers as they begin to swell before expansion, fruit sub-spherical size of a cherry. *Wight Icones tab.* 537.

It would require a very large plate to do justice to this beautiful species, the tree is common on the Nallay Mallay mountains in the Kurnool district, (where it is called Manchi Moyadi, Teligoo) and is also found but less abundantly in the dry hill forests of the Cuddapah and North Arcot districts; it does not occur on the western side of the Presidency. Its regularly alternate leaves are anomalous, but there is a tendency to this in some of the other species (montana and hemisphærica, &c.), its flowers are quite those of the other species of Syzygium (and are incorrectly figured in Wight's Icones as like the Jambosa section.) The dissections are drawn from fresh specimens, and the fruit is only half grown; the timber is used by the natives for building and other purposes.

Govindo, del.

Dumphy Lith.

Eugenia alternifolia (Wight.)

EUGENIA MALABARICA. (Nat. order Myrtaceæ.)

For Gen. Char. see under this Order in the Manual.

EUGENIA MALABARICA. (Bedd.) A middling sized tree, quite glabrous in all its parts, young branches terete, leaves opposite, (rarely only subopposite) furnished with numerous very minute dots on the under surface, obovate spathulate or quite obcordate, rarely oblong, penniveined with the marginal looping inconspicuous, 2-5 inches long by 1-2¾ inches broad, petioles 4-6 lines long, cymes from the old wood below the leaves or rarely in the lower axils very short about ½ an inch long, flowers numerous very small and inconspicuous bracteolate, calyx-tube when young with 4 rather distinct triangular lobes, in age more or less truncate about 1 line in diameter, petals orbicular with a slight claw and pointed at the apex opening separately and very soon deciduous, fruit spherical about 3 lines in diameter.

This tree is very common in the Wynad (in Malabar), elevation 2000 4500 feet, generally in swampy places, and I have also specimens from the Anamallays: it is a very distinct species. I have introduced it here as illustrating the section of Syzygium with free petals instead of the usual calyptra-like conjunction of the 4 petals, this difference however could not be made even a sub-section of Syzygium, as some of the species present both forms in one and the same cyme, the dissections are drawn from fresh specimens.

Govindo, del.

Dronphy Lith:

Eugenia Malabarica (Bedd:)

EUGENIA FLOCCOSA. (Nat. Ord. Myrtaceæ.)

For Gen. Char. see under this Order in the Manual.

EUGENIA FLOCCOSA. (Bedd.) A good sized tree, young branches nearly terete densely floccose, leaves opposite, oval or sub-orbicular or sometimes lanceolate obtuse at the apex, densely floccose on both sides when young, at length glabrous above and ultimately so beneath except the costa, very thick and coriaceous, minutely dotted beneath, 3-5 inches long by 2-3½ broad, veins quite inconspicuous except in dried specimens, penniveined with the usual marginal looping or occasionally sub 3 nerved at the base, the 2 lateral nerves not prominent and forming the waved marginal vein, petioles densely floccose 6-8 lines long, flowers terminal in very short few flowered cymes or sometimes solitary large about 1 inch in expansion, calyx very coriaceous and densely aureo-or rufo-lanate furnished at the base with 2 very large bracteoles of the same texture as the 4 rounded lobes, petals much larger than the calyx lobes white very hairy on the outside subglabrous within, soon deciduous, disk large sub-globose lanate, fruit size of a pigeon's egg densely lanate crowned with the 4 large orbicular calyx lobes.

This is a most beautiful tree very common in the dense moist woods on the South Tinnevelly ghats (above Calcad) 3000-4000 *feet elevation, flowering in August and September; this illustrates the restricted genus Eugenia of authors who uphold the genera Syzygium, Jambosa, &c., or the section Eueugenia of the genus as given in this Manual, the dissections are from flowers in spirit.*

Govindo. del;

Dumphy Lith:

Eugenia floccosa, (Bedd)

EUGENIA CYLINDRICA. (Nat. order Myrtaceæ.)

For Gen. Char. see under this Order in the Manual.

EUGENIA CYLINDRICA. (Wight.) A middling sized tree, glabrous in all its parts, leaves opposite coriaceous, very minutely dotted, ovate to lanceolate with a long terminal acumination, 4-6 inches long by $1\frac{1}{2}$-$1\frac{3}{4}$ broad, veins very conspicuous beneath, and forming double loops the inner of which is very prominent and only a little more than $\frac{1}{2}$ way between the costa and margin, petioles 3-4 lines long, cymes terminal or from the upper axils shorter than the leaves, 3-8 flowered, flowers large $\frac{1}{2}$ to nearly 1 inch in diameter in full expansion white turning purple, calyx tube cylindrical slender $\frac{3}{4}$ to nearly 1 inch long slightly contracted at the apex and tapering at the base, petals orbicular dotted, fruit subsphærical urceolate $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter. *Wight Icones tab.* 527. Jambosa cylindrica, *Thw. En. Pl. Zey. p.* 115.

A very beautiful tree when in flower, Ceylon Ambagamwa district 3000 *feet elevation, it has not been detected in the peninsula but probably occurs on our Tinnevelly mountains. Eugenia Wightii (described in the Manual) so common in our forests, is an allied species, but differs in its flowers being always solitary and much larger though with a shorter tube, and in its leaves being much more membranceous with a different venation. This illustrates the section Jambosa.*

Govindo, del.

Dumphy Lith.

Eugenia cylindrica (Wight.)

EUGENIA ZEYLANICA. (Nat. order Myrtaceæ.)

For Gen. Char. see under this Order in the Manual.

EUGENIA ZEYLANICA. (Wight.) A small or middling sized tree, glabrous in all its parts, leaves opposite rarely alternate or subalternate, densely glanduloso-punctate, very variable in shape from narrow linear to ovato-lanceolate ; 1-4 inches long by 1½ to 10 lines broad, veins penniveined very inconspicuous, petioles 1-4 lines long, cymes axillary and terminal dense many flowered, shorter than the leaves, flowers white conspicuous about ½ an inch long. calyx-tube glandular and sometimes pruinose, elongato-turbinate, lobes 4-5, rather conspicuous triangular, petals crenated very early deciduous, opening separately or falling off in a calyptra. *Wight's Ill.* ii. *p.* 15. Acmena Zeylanica, *Thw. En. Pl. Zey. p.* 118.

Var. B. laxiflora flowers in lax few-flowered cymes, panicles longer than the leaves.

This tree is common on the South Tinnevelly mountains up to 3500 *feet where it generally affects beds of rivers, and in Ceylon where it is called Morang; it is very beautiful when in full flower. This illustrates the Acmena section of Eugenia, which only differs from Syzygium in its long calyx-tube.*

Variety B. has exactly the foliage and flowers of the ordinary form, and only differs in its longer lax cymes

Fig. A. is a flower branch of the ordinary narrow leaved variety.

Fig. B. leaves of the broader leaved variety.

Fig. C. a leaf and cyme of variety B.

Analysis.

1. A bud.
2. A flower, the petals falling off in a crenated calyptra as the anthers swell before expansion.
3. A calyx showing the insertion of the anthers at the apex of the tube, and a single petal, the petals having opened and fallen off separately.
4. A flower after the anthers have opened out.
5. Anther, front view.
6. Anther, back view.
7. Flower cut vertically, showing the calyx tube produced above the ovary, and section of the ovary.
8. Ovary cut transversely.

Covindo, del.

Dumphy, Lith.

Eugenia Zeylanica (Wight)

EUGENIA HEMISPHÆRICA. (Nat. order Myrtaceæ.)

For Gen. Char. see Manual under this Order.

EUGENIA HEMISPHÆRICA. (Wight.) A large tree, glabrous in all its parts, leaves opposite, rarely subalternate minutely dotted lanceolate attenuated at the base, acuminate at the apex, veins inconspicuous above slightly prominent beneath, looped near the margin and there forming a more or less irregular continuous vein, 2-6 inches long by $\frac{3}{4}$-2 inches broad, petioles 6-7 lines long, cymes axillary and terminal shorter than the leaves many flowered, flowers large white variable in size up $1\frac{1}{2}$ inches in diameter, calyx-tube subglobose, disk tetragonal 4-5 lines in diameter, petals orbicular dotted, fruit sphærical about 1 inch in diameter. *Wight Icones tab.* 525. Strongylocalyx hemisphæricus, *Bl. Mus. Bot. p.* 90.

This very handsome tree attains a large size and is common in our mountain forests from South Canara down to Cape Comorin at about 3000 *feet elevation, it is abundant in Coorg, the Anamallays, and Tinnevelly ghats, and it is also found in Ceylon up to* 4000 *feet; the timber is used for a variety of purposes. The drawing is taken from Coorg specimens. Blume separates this as a distinct genus under the name of Strongylocalyx on account of its rounded (instead of cylindrical) calyx tube and its tetragonal disk, it has certainly no claims to generic distinction nor need it be even kept sectionally distinct from Jambosa. Eugenia lanceolaria is closely allied if indeed a distinct species.*

Govindo, del: Dumphy Lith

Eugenia hemisphærica, Wight.

BARRINGTONIA ACUTANGULA. (Nat. order Myrtaceæ.)

BARRINGTONIA. *Forst.*—GEN. CHAR. Calyx tube ovoid or turbinate, not at all or scarcely produced above the ovary, the limb either closed in the hud and splitting into 2 to 4 valvate segments or rarely with 3 or 4 lobes, imbricate in the bud. Petals 4 or 5, adhering at the hase to the staminal cup. Stamens numerous, in several series, shortly united at the base into a ring or cup; authers small, with parallel cells opening longitudinally. Ovary inferior with an aunular disk on the top within the stamens, 2 to 4 celled, with 2 to 8 ovules in each cell, horizontal or pendulous, in 2 rows; style filiform with a small stigma. Fruit pyramidal ovoid or oblong, hard and fibrous, indehiscent. Seed usually solitary, with a thick testa; exalhuminous embryo undivided, consisting of a thick woody stratum, and a more or less distinct pith in the centre, no cotyledons. Trees. Leaves alternate, usually crowded at the ends of the branches, penniveined and not dotted. Flowers in terminal or lateral spikes or racemes. Bracts small and deciduous. —*Benth. Fl. Aust.* iii. *p.* 287. Stravadium, *Juss.* Butonica, *Mig. Fl. Ind. Bat.* 1. *pars.* 1. 485. Botryoropis, *Presl. Epimel. Bot.* 220. Meteorus, *Lour.*

BARRINGTONIA ACUTANGULA. (Gærtn.) A large handsome tree. Leaves from obovate or oblong-cuneate to almost elliptical, obtuse or shortly acuminate, rarely much above 4 inches long, serrulate or entire, narrowed into a short petiole. Flowers red, rather small in very long slender pendulous racemes. Bracts oblong, very deciduous. Pedicels 2 to 4 lines long, calyx tube ovoid globose, about 1 line long; lobes 4, rather longer than the tube, orbicular. Petals about twice as long as the calyx-tube. Stamens not much longer than the petals. Ovary 4 celled or spuriously 4 celled, with 2 pendulous ovules in each cell. Fruit oblong, 4 angled, 1 inch long or rather more. *Wight and Arn. Prod.* 333. Stravadium rubrum, *DC. Prod.* iii. 289;—*Benth. Fl. Aust.* iii. *p.* 288. Botryoropis, *Presl. Epimel. Bot.* 220. Tsjeria samstravadi, *Rheede Mal.* 4 *t.* 7.

This beautiful tree is common throughout this Presidency, as well as in most parts of India, Birmah and Ceylon, on the banks of rivers, and it is also found in the Archipelago and in Australia; it is called Kurpà in Teligu, Piwar in Bombay, and Kyaitha in Birmah; the wood is of a beautiful red color, tough and strong and stands a good polish, a cubic foot unseasoned weighs 65-70 *lbs. and* 56 *lbs. when seasoned, and its specific gravity is* ·896, *it is greatly in request by cabinet makers, and the native workmen in Madras call it Munneelahancha from its susceptibility of turning black when buried in mud. The bark, the juice of the leaves, and the kernels of the fruit, are in use medicinally with the natives; the tree flowers at the end of the hot season or at the beginning of the rains, and is a beautiful object on the banks of some of our western coast backwaters.*

Analysis.

1. A flower bud showing the bracteole at the base.—1*a*. Petals removed from the bud, showing the much bent filaments all fertile.
2. A full flower.
3. The 4 petals removed, showing that they are slightly joined at the base.
4. Petals and stamen tube removed and opened out, the former are adnate to the back of the tube and the stamens are in 3 rows, the filaments are often broken and appear like staminodes, hut all bear fertile anthers in the bud.
5. A portion of the staminal tube more highly magnified.
6. Au anther, showing that it is basifixed.
7. A flower, petals and stamens removed, showing the ring-like disk at the apex of the ovary.
8. Ovary cut vertically, showing the pendulous ovules.
9. Ovary cut transversely, showing 4 cells with 2 ovules in each cell.
10. Magnified portion of a young leaf underside showing the venation, the small serratures, and slight pubescence. The dissections all taken from fresh flowers. (This species is generally described as having a 2 celled ovary; in all the ovaries that I have examined there were 4 cells.) F. *a*. is a drawing showing a germinating seed of Barringtonia racemosa after Dr. Roxburgh's drawing.

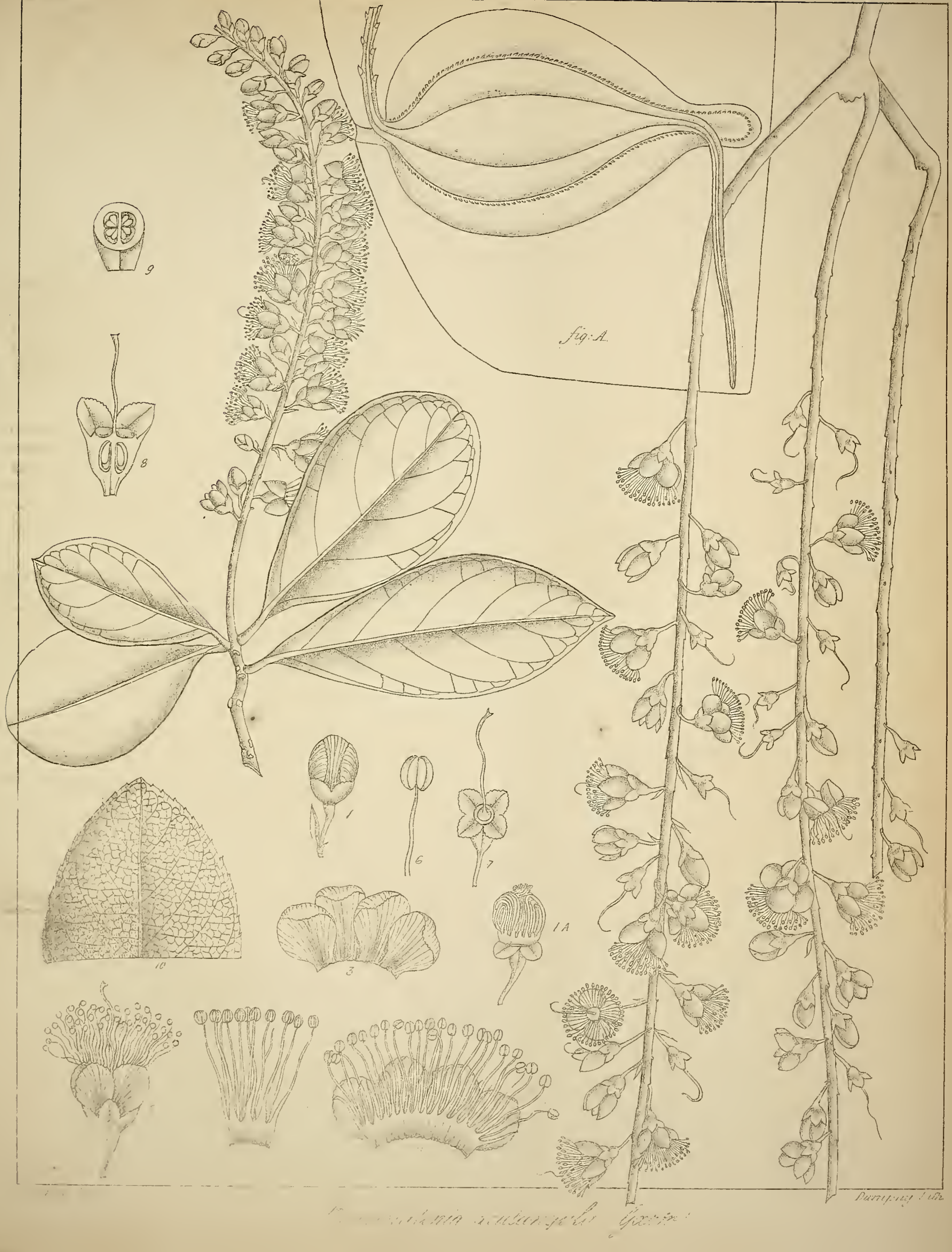


fig: A.
9
8
1
6
7
1 A
10
3